CALCOMP

03M09D16

Product Support

Part No. 10020-901-002-0

MODEL 663 AND MODEL 665
DIGITAL INCREMENTAL PLOTTER
MAINTENANCE MANUAL

January 1970

CALCOMP
CALIFORNIA COMPUTER PRODUCTS, INC.
305 NORTH MULLER STREET, ANAHEIM, CALIFORNIA 92803

Copyright © 1970, by
CALIFORNIA COMPUTER PRODUCTS, INC.

This document contains proprietary information of California Computer Products, Inc. (Company) and is submitted in confidence. Recipient agrees not to disclose or use the information contained herein except in connection with Company products, or reproduce in whole or in part without written permission from the Company.

Printed in the United States of America

CONTENTS

Section		Page
1	GENERAL DESCRIPTION	
	Standard Logic Circuits	1-1
	Logic Equation Explanation	1-3
2	MAINTENANCE	
	Routine Inspection and Maintenance	2-1
	Cleaning	2-1
	Lubrication	2-1
	Troubleshooting	2-2
	Drum Step Motor	2-3
	Carriage Step Motor	2-3
	Limit Switches	2-3
	Paper Tracking	2-4
	Rear Takeup Spool Adjustment	2-4
	Front Chart Drive Spool Adjustment	2-6
	Disassembly and Replacement	2-6
	Plotter Cover Removal	2-6
	Chart Drive Spool Motor Replacement	2-6
	Carriage Cable Replacement	2-7
	Card Cage Cover Removal	2-10
	Circuit Card Removal	2-10
	Resistor Panel Removal	2-11
	Power Supply Chassis Removal	2-11
	Card Cage Assembly Removal	2-11
3	LOGIC DIAGRAMS	
4	LOGIC EQUATIONS	
5	PARTS LIST	
6	SCHEMATIC DIAGRAMS	
7	WIRE LISTS	

ILLUSTRATIONS

Figure		Page
1-1	Diode Gating Circuits, Standard Logic Symbols	1-2
1-2	Active Circuit Elements	1-3
2-1	Major Component Location and Step Motor Adjustments	2-2
2-2	Limit Switch Adjustment	2-4
2-3	Chart Drive Spool Adjustments and Cover Removal	2-5
2-4	Takeup Spool Motor Lead Connections	2-7
2-5	Carriage Cable Routing	2-8
2-6	Plotter Desk Electronics, Major Assembly Removal	2-10
2-7	Locations of Major Electronic Components	2-12
2-8	Power Supply Chassis	2-12
2-9	Chart Drive Spool Adjustments and Cover Removal, Model 665	2-15
LD1	Input Circuits and Simulator Logic	3-1
LD2	Logic Gates and Test Switch Logic	3-3
LD3	Timing Logic	3-5
LD4	Plotter Controls Logic	3-7
LD5	X-Axis Drive Logic	3-9
LD6	Y-Axis Drive Logic	3-11
LD7	Z-Axis Drive Logic	3-13
	Power Distribution Diagram	3-15

TABLES

Table		Page
2-1	Troubleshooting Chart	2-13
2-2	Model 665 Circuit Card Complement	2-14
5-1	Model 663 Plotter Loose Equipment	5-1
5-2	Model 665 Plotter Loose Equipment	5-1

SECTION 1
GENERAL DESCRIPTION

This manual contains the necessary information for servicing the Models 663 and 665 Digital Incremental Plotters. This section contains a description of the basic elements and symbology used and an explanation of logic equations.

STANDARD LOGIC CIRCUITS

AND functions and OR functions are incorporated in the logic by means of diodes mounted on the plug-in circuit boards along with other types of logic elements. There is no single type of board which contains only diodes. Instead, for example, there are boards like the "Flip-Flop Logic " board which contains two flip-flops and numerous diode networks. This system enables the designer to locate the fan-in gating logic to the flip-flops on the same board which contains the flip-flops, cutting down wire lengths and reducing the possibility of noise pickup.

Most of the ways in which the diode networks are connected to form gates are illustrated in Figure 1-1. As a matter of practical fact, when troubleshooting through the plotter logic in this manual it is necessary to refer only to the logic diagrams themselves. They show all jack and pin signal connections in a functional layout. Tracking all the gating through the diode circuits would consume a great deal of time and serve no useful purpose. However, the basic diode connections are presented in Figure 1-1, to enable the user of this manual to solve isolated problems which require him to resort to the detailed schematics of the circuit boards.

Detail A of Figure 1-1 shows how AND gates are built up from the diode networks. Two diodes from each of the two groups on the board are combined into a four-leg input AND gate. A low at A, B, C, or D will drop the output, making the equation for this circuit a simple AND function. Positive voltage to energize the gate comes from the upper network in the board diagram; the two diodes included from the lower network simply expand the capacity.

Detail B points up the fact that the AND function remains unchanged if the output of one of the two networks is taken through a reversed diode instead of directly from the common-cathode connection of the AND diodes. To explain the operation of this circuit in a little more detail the nature of the circuit which follows it is also shown. In this system all diode gates will feed into a succeeding circuit similar to that of detail B, where the input signal is fed anode-to-cathode through a series diode and then returned to -8V by a resistor. Note that all positive voltage for this AND circuit is still supplied from the upper diode network. It is routed through the output diode but this does not negate the AND function. A low at C or D will still drop the output because of the -8V return in the following circuit.

The OR function is illustrated in Detail C. Whenever the designer desires that an output be true whenever either of two inputs (or sets of inputs) is true, he applies the input signals to separate diode networks, each of which has its own voltage source, and takes the outputs of the networks from two diodes connected in parallel. Thus, when fed to a standard following circuit, the two parallel output diodes become an OR gate. As stated earlier under "Logic Symbols", the OR symbol itself is not used on the diagrams because it does not exist as a separate wired element, and one of the basic (and important) functions of the logic diagrams is to show all card and pin connections so circuits can be traced in the actual hardware.

Practically all combinations which occur in the logic diagrams are included in the five-symbol group of Detail D. Note that to read the entire equation from the diagram it is only necessary to start at the top and scan down, saying "AND" whenever two gates are paired without diodes in both their outputs, and saying "OR" whenever each of a series of paralleled "OR diodes" is encountered. Thus, the output of the top gate (J1-4, 2, 3) is ANDed with the output of the center group of three (all J2 symbols) or the output of the bottom pair. The full equation is given in the illustration. That is all there is to reading the diagrammed logic; no conventions other than the two simple ones of Figure 1-1 are needed in the diode logic of the tape unit.

Figure 1-2 shows the active circuit elements found in the LD logic diagrams along with typical input and output waveforms and voltages.

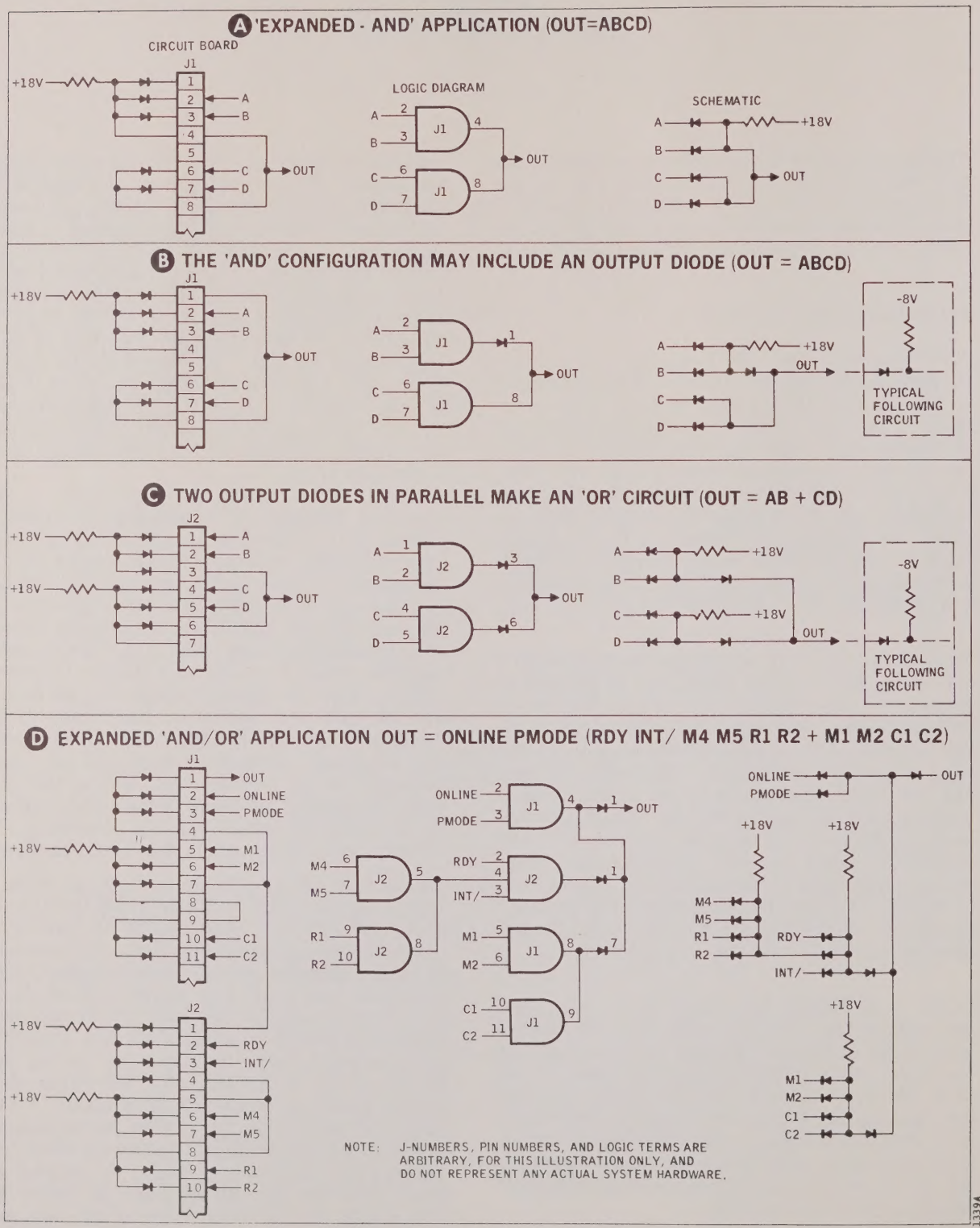


Figure 1-1. Diode Gating Circuits, Standard Logic Symbols

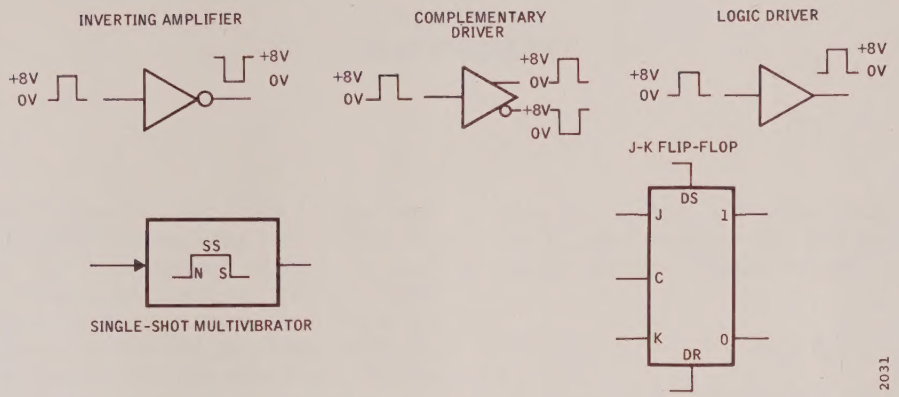


Figure 1-2. Active Circuit Elements

LOGIC EQUATION EXPLANATION

Where an equation consists of more than one line, each line indicates the logic terms supplied by a single gate. Primary AND gate outputs are designated by a dash (–) at the end of the term. An extended AND gate is designated by a dash (–) and a number at the end of the term. Secondary level gating is indicated by a dash (–) and a letter as the suffix. Outputs of logic drivers are identified by an asterisk. The significance of a numeral at the start of an input term to various logic elements is as follows:

0 – 0-set clocked input to a flip-flop
1 – 1-set clocked input to a flip-flop
2 – 0-set dc input to a flip-flop
3 – 1-set dc input to a flip-flop
4 – input to a noninverting logic driver
5 – input to an inverting logic driver
6 – input to a noninverting clock amplifier
7 – input to an inverting power driver (lamp, relay)
8 – input to a noninverting special amplifier
9 – input to an inverting special amplifier

The true condition for any logic term corresponds to a level of +8 volts; a false condition corresponds to ground or 0 volt.

SECTION 2
MAINTENANCE

The electronic circuits contained in the desk assembly (690 Electronics, Dwg. No. 10067-101) are identical for both plotter models, as are most of the mechanical elements. The essential differences can be readily seen by comparing Figure 2-9 showing the 665 plot head, with the corresponding figures for the Model 663. Unless otherwise noted, all adjustments and maintenance procedures herein are identical for both models.

Plotter malfunctions can be classified into three types: (1) mechanical and electromechanical malfunctions, (2) failures in the electronic circuitry, and (3) power failures in either the primary ac power source or the dc power supply. Troubleshooting instructions for the electronic components of the plotter are listed in Table 2-1. The locations of the major mechanical and electromechanical assemblies are shown in Figure 2-1. Locations of the major electronic components are shown in Figure 2-7 and the circuit card locations are listed in Table 2-2.

ROUTINE INSPECTION AND MAINTENANCE

At periodic intervals, depending upon the schedule of plotter operation, an overall inspection should be made of the unit. This inspection should include both visual and mechanical checks of all moving parts on the plotter for signs of wear and stress, loose mountings, broken and damaged components, proper seating of the plug-in circuit cards in the card cage, operation of the plotter fan, the resistor panel fan, and the two power supply fans, and presence of dirt or other foreign materials that could cause a malfunction. These checks are especially important after the unit has been moved.

Cleaning

The only components of the plotter requiring periodic cleaning are the carriage rods, the drum surface, and the metal plunger inside the pen assembly. The intervals at which the cleaning should be performed will be dictated by the operating environment and the frequency of use. All normal cleaning can be performed with a soft, dry cloth. If necessary, the cloth may be moistened with a solvent to remove foreign matter. A solvent such as wood alcohol or lacquer thinner that will not leave a residue on the surface should be used.

NOTE

It is extremely important that the carriage rods be cleaned every eight hours of plotting operations. This will eliminate the biggest source of plotting discrepancies.

If the carriage rods are not cleaned regularly, it may also be necessary to clean the dirt accumulation from the inside mating surfaces of the carriage assembly which ride on the rods. This is accomplished by removing the rods from the plotter and wiping these surfaces with a Q-Tip or similar swabbing device dipped in alcohol. The procedure for removing the carriage rods is described in steps 6, 7, and 8 of Carriage Cable Replacement.

CAUTION

While it is not necessary to remove the carriage from the plotter to perform this operation, exercise extreme care to prevent damage to the carriage drive cable and the Teflon insulation. This cable supplies +24 vdc to the pen solenoid.

The inside of the pen assembly plunger should be cleaned by pushing one corner of the cloth through the center. If the plunger is clogged, it should be dipped in cleaning solvent and then wiped dry.

Lubrication

Most units do not require lubrication. Some older units are equipped with Rotron Muffin fans, which should be lubricated annually. (These fans, one located in the bottom plate of the plotter, another in the resistor panel, and two in the right panel of the power supply chassis, are black; the lifetime-lubricated Sentinel fans used in later units are green.) To oil the fans, put a small amount of light oil in a hypodermic

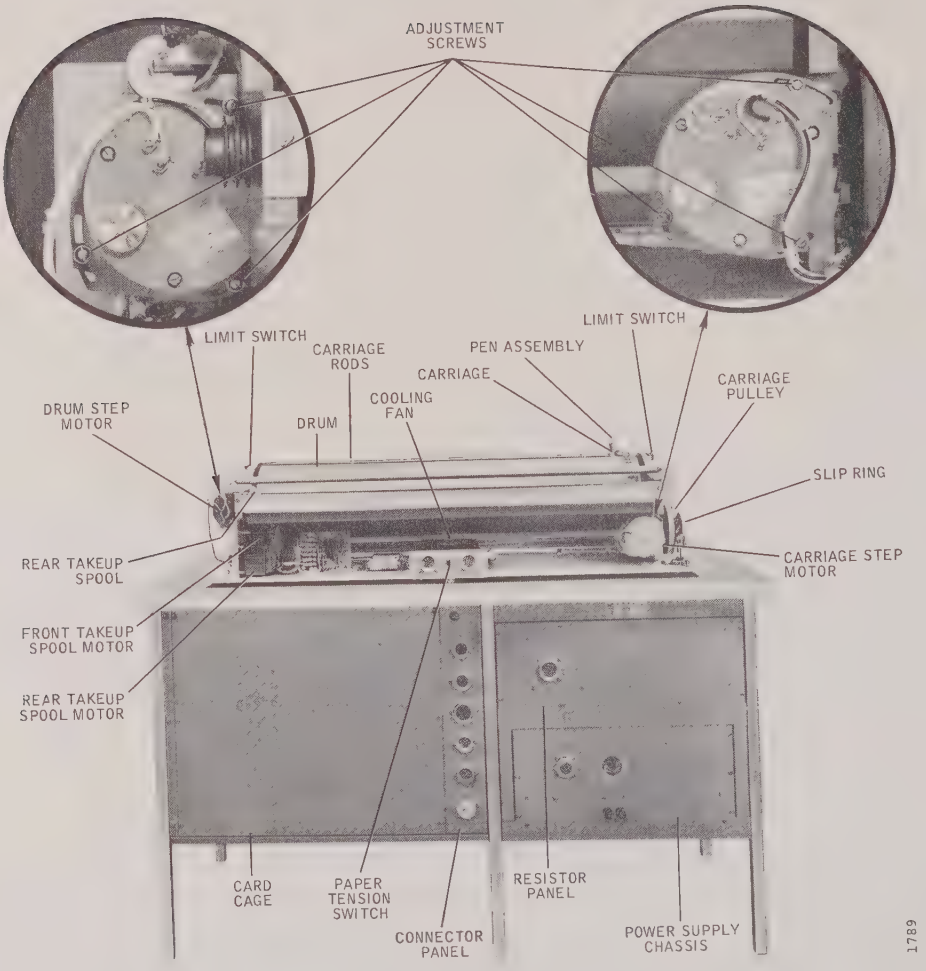


Figure 2-1. Major Component Location and Step Motor Adjustments

syringe. Pierce the center of the letter O of the word OIL on the fan label and squeeze a few drops of oil onto the bearing. DO NOT OVEROIL. Excess oil may be blown into the internal areas of the plotter or electronics resulting in damage.

Troubleshooting

Mechanical malfunctions of the plotter can usually be isolated by visual inspection and analysis of the behavior of the unit while operating the plotter with the manual control switches.

Operation of the two chart drive motors can be checked visually by observing the pulleys and drive belts at the right end plates of the plotter while the CHART DRIVE switch is on. Operation of the pen solenoid can be checked by operating the PEN UP/DOWN switch and visually observing the pen action. The following paragraphs describe various plotter mechanical adjustments which can be made to correct an associated malfunction.

NOTE

Unless the cause of a malfunction is readily apparent and obviously of a mechanical nature, always check the plotter control logic before disassembling or adjusting any components.

Drum Step Motor

If plotting overshoots occur in the X-axis, this is usually an indication that the mating of the drum step motor worm gear and the associated drum gear is too loose causing drum play (backlash). To correct this condition, the drum step motor can be adjusted to tighten the mating of these gears as follows:

1. Connect power to the plotter and place the POWER switch in the STANDBY position. Place all other switches in the normal operating positions.

2. Loosen the three machine screws in the three slots in the outside edge of the motor frame (see Figure 2-1).

3. Rotate the step motor in an outward direction a fraction of an inch wide at the same time manually moving the drum back and forth by hand. When no drum movement can be felt, retighten the three screws.

4. Manually run the drum using the DRUM FAST and DRUM SLOW switches and check for proper drum operation.

5. Repeat this procedure as necessary until the drum movement is smooth and constant, and no backlash can be felt.

CAUTION

Do not overtighten. Excessive tightness will result in damage to the gears.

The converse of this condition (step motor too tight) is evidenced by either the drum skipping steps or no drum movement at all. This condition can be corrected in the same manner except that the step motor must be rotated in an inward direction. Avoid overcompensating which can result in a loose step motor adjustment as described in the preceding paragraph.

Carriage Step Motor

Overshoots in plotting, skipping of steps, and no movement in the Y-axis is usually an indication that the carriage step motor is out of adjustment. If the mating of the step motor gear and the carriage pulley gear is too loose, the carriage will overshoot the point at which a change in direction should take place. This is especially noticeable in plotting annotations. If the mating of these two gears is too tight, the carriage will either skip steps or lockup altogether. Both of these conditions can be corrected as follows:

1. Connect power to the plotter and place the POWER switch in the STANDBY position. Place all other switches in the normal positions.

2. Loosen the three machine screws in the three slots in the outside edge of the step motor frame (see Figure 2-1).

3. If the step motor is too loose, rotate the motor inward a little at a time while moving the carriage back and forth by hand. When the point where no carriage movement can be felt is reached, retighten the three screws. Follow this same procedure when the adjustment is too tight, except rotate the motor outward until a small amount of carriage play can be felt. Then rotate the step motor inward until no carriage movement can be felt and tighten the three screws.

4. Manually run the carriage using the CARRIAGE SLOW and CARRIAGE FAST switches and check for proper carriage operation.

5. Repeat this procedure as necessary until the carriage movement is smooth and constant.

CAUTION

Do not overtighten. Excessive tightness will result in damage to the gears.

Limit Switches

The limit switches should be set to be activated by the carriage when the pen point is 1/16 inch from the perforated tear line on the chart paper (see Figure 2-2). Adjustment of the limit switches for both margins is accomplished as follows:

1. Connect power to the plotter and place the POWER switch in the STANDBY position. Place all other switches in the normal operating positions.

2. Use the CARRIAGE FAST switch to run the carriage as far as possible to the desired margin.

3. Place the PEN UP/DOWN switch in the DOWN position and note the position of

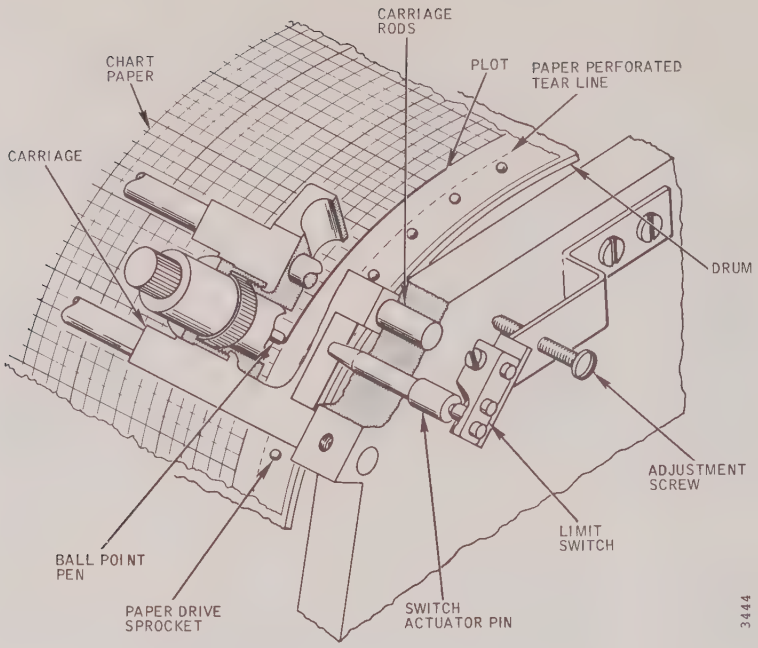


Figure 2-2. Limit Switch Adjustment

the pen point on the paper. The pen point should not be closer than 1/16 inch from the perforated tear line on the paper. (See Figure 2-2).

4. If the pen point is improperly positioned, adjust the limit switch either inward or outward as required by means of the limit switch adjustment screws. Turning this screw clockwise moves the limit switch outward while turning it counterclockwise moves the switch inward.

5. After the switch has been adjusted, manually run the drum in either direction using the DRUM FAST switch and inspect the resulting plot for the proper limit switch setting.

CAUTION

To avoid damage to the pen assembly, make sure the pen point does not catch in the sprocket slots on the right side of the drum.

Paper Tracking

Evidence of incorrect paper movement from one takeup roller to the other usually occurs as a result of the sprocket holes in the edges of the paper being out of alignment with the sprockets on the edges of the drum. Adjustments are provided on both the front and rear chart drive spools to correct this condition. The procedure for these adjustments are described in the following paragraphs.

Rear Takeup Spool Adjustment

Normally, the only adjustment of the chart drive spool that is required for proper alignment of the sprocket holes in the paper with the drum sprockets is to shift the right rear spool to either the left or right. This is accomplished as follows:

1. Connect power to the plotter and place the POWER switch in the STANDBY position. Place all other switches in the normal operating positions.

2. Run the drum in the down (forward) direction by using the DRUM FAST switch. Determine whether the chart drive spool should shift to the left or right for proper alignment of the paper sprocket holes with the drum sprockets.

3. Loosen the setscrew in the right top dancing bar holder over the right spool with a 3/32-inch Allen wrench (see Figure 2-3).

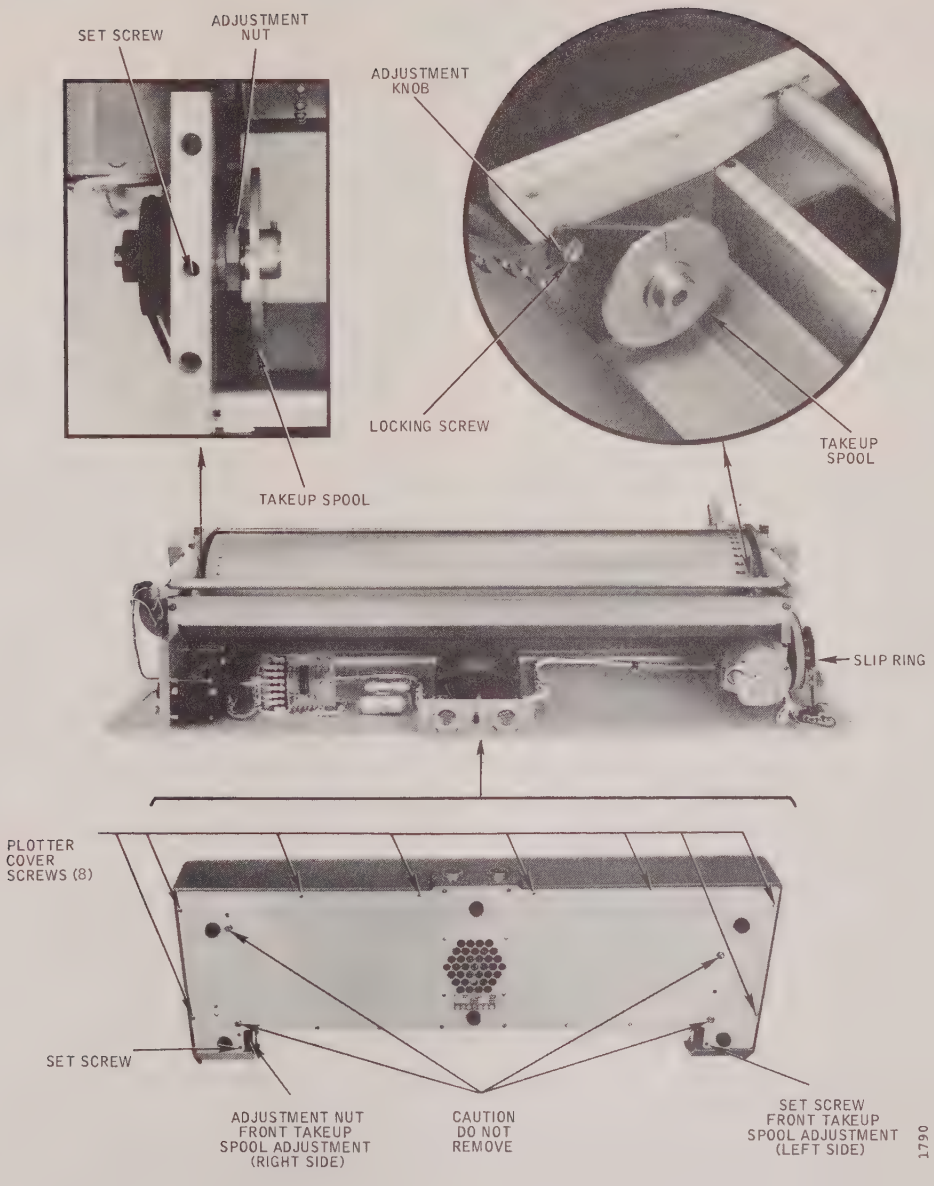


Figure 2-3. Chart Drive Spool Adjustments and Cover Removal, Model 663

4. To shift the spool to the left (as viewed from the front of the plotter) turn the adjustment nut on the chart drive spool shaft on the inside of the frame in an outward direction (toward rear side of plotter) until the paper sprocket holes line up with the drum sprockets. Turning this nut in an inward direction (toward front side of plotter) shifts the chart drive spool to the right.

5. When the holes are properly aligned with the drum sprockets, retighten the setscrew in the top of the plotter frame and run the drum in the down direction; check for proper paper flow.

On the Model 663, it may also be necessary to adjust the left, rear chart drive spool if a wrinkle occurs in the paper as it feeds

onto the drum. This adjustment lowers or raises the left takeup spool at a 45-degree angle (see Figure 2-3).

- Loosen the screw in the center of the knurled adjusting knob.
- Turn the knob very slowly in either direction until the wrinkle in the paper completely disappears.
- Retighten the screw in the center of the adjusting knob.
- Run the drum in the down (forward) direction with the DRUM FAST switch and check for proper paper flow onto the drum.

Front Chart Drive Spool Adjustment

The front chart drive spools should rarely require any adjustment. If the paper does not feed onto the front spool properly, both the left and right spools may be shifted either left or right as required. Normally, adjustment of the right spool will be sufficient. The right chart drive spool setscrew and adjustment nut are accessible from the bottom of the plotter as shown in Figure 2-3. The left chart drive spool setscrew is also accessible from the bottom of the plotter while the adjustment nut is located on the outside face of the left end plate. Adjustment of these two spools is accomplished by the same procedure used for the right rear chart drive spool described in the preceding paragraph except turning the adjustment nuts outward (away from plotter) shifts the spools to the right and turning the adjustment nuts inward (toward rear side of plotter) shifts the spools to the left.

DISASSEMBLY AND REPLACEMENT

Except as noted in the following paragraphs, disassembly and replacement procedures for mechanical components of the plotter will be obvious upon inspection. The mechanical adjustments required after replacement were described previously.

CAUTION

Disassembly and replacement of the drum, step motors, frame, base plate, and electronic components on the circuit cards, power supply chassis, resistor panel, etc. should not be attempted. Special alignment equipment and specially manufactured components prohibit the replacement of these parts except by a CalComp service representative or the factory.

Plotter Cover Removal

For access to the components within the plotter, the plotter cover can be removed as follows:

1. Disconnect the cables from the two external connectors on the back panel of the plotter.
2. Remove the pen assembly and carefully turn the plotter over so that it is resting on its top. Exercise extreme care in turning the plotter over to prevent damage to any components on the plotter top side.
3. Remove the eight pan-head screws located along the left, right and rear edges of the base plate. The locations of these eight screws are shown in Figure 2-3. (Figure 2-9 for the Model 665.)

CAUTION

Remove only those screws designated in Figure 2-3. Removal of any screws other than these eight will cause mechanical misalignment and result in damage to the plotter.

4. Turn the plotter back over to its normal position and remove the cover by sliding it back while at the same time lifting up. DO NOT FORCE THE COVER OFF. The cover should slide off with relatively little pressure.

Chart Drive Spool Motor Replacement

Ordinarily, the two chart drive spool motors will never require replacement or repair during the life of the plotter. The location of these two motors is shown in Figures 2-1 and 2-9. If one of the motors should ever require replacement, replace it as follows:

1. Disconnect the external cables at the rear of the plotter and remove the cover.
2. Remove the drive belt between the motor and chart drive spool pulleys.
3. Clip the lacing twine from the motor leads to separate the leads from the wiring harness.

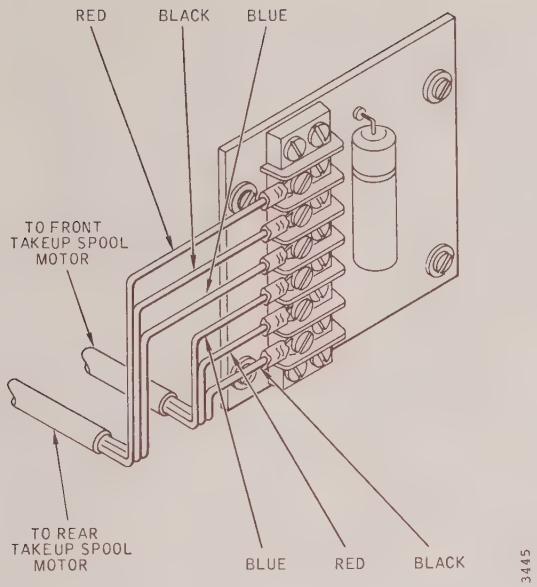


Figure 2-4. Takeup Spool Motor Lead Connections

4. Remove the leads from the terminal board (see Figure 2-4).

5. Remove the four mounting screws located on the outside of the frame and slide the motor back and out. Save these screws.

6. Slide the new motor into place; install and tighten the four mounting screws.

7. Connect the motor leads to the terminal board as shown in Figure 2-4 and replace the drive belt.

8. Reconnect power to the plotter and place the POWER switch in the STANDBY position.

9. Turn the CHART DRIVE switch to ON and observe the direction of the motor. The rear chart drive spool motor should turn counter-clockwise (as viewed from the right end of the plotter) and the front spool should turn clockwise. If the replaced motor turns in the wrong direction, reverse the associated red and black motor leads at the terminal board.

10. After the motor is running correctly, relace the motor leads to the cable harness.

Carriage Cable Replacement

The carriage cable should ordinarily never require replacement. If damaged, this cable may break or cause a carriage malfunction requiring replacement of the cable. The procedure for replacing this cable requires strict adherence to the following step-by-step procedure. Figure 2-5 shows the correct cable routing and part numbers for both the 663 and 665.

1. Disconnect the plotter power and remove the two brackets holding the carriage slipring contacts and lay them aside. Do not disconnect the leads. These two brackets can be disassembled from the base plate by removing the two screws in the base of each bracket.

2. Loosen the turnbuckle on the side of the carriage pulley holding one end of the cable.

3. Loosen, but do not remove, the nut on the carriage pulley shaft and loosen the pulley on the shaft by slowly applying pressure on the pulley in an outward direction until it slides loose on the tapered shaft. Then remove the nut and slide the pulley from the shaft.

4. Slip the end of the cable from the turnbuckle and unwind the cable from the pulley. Disconnect the other end of the carriage pulley by removing the screw that attaches the end of the cable to the inside face of the pulley, and unwind the cable from the pulley.

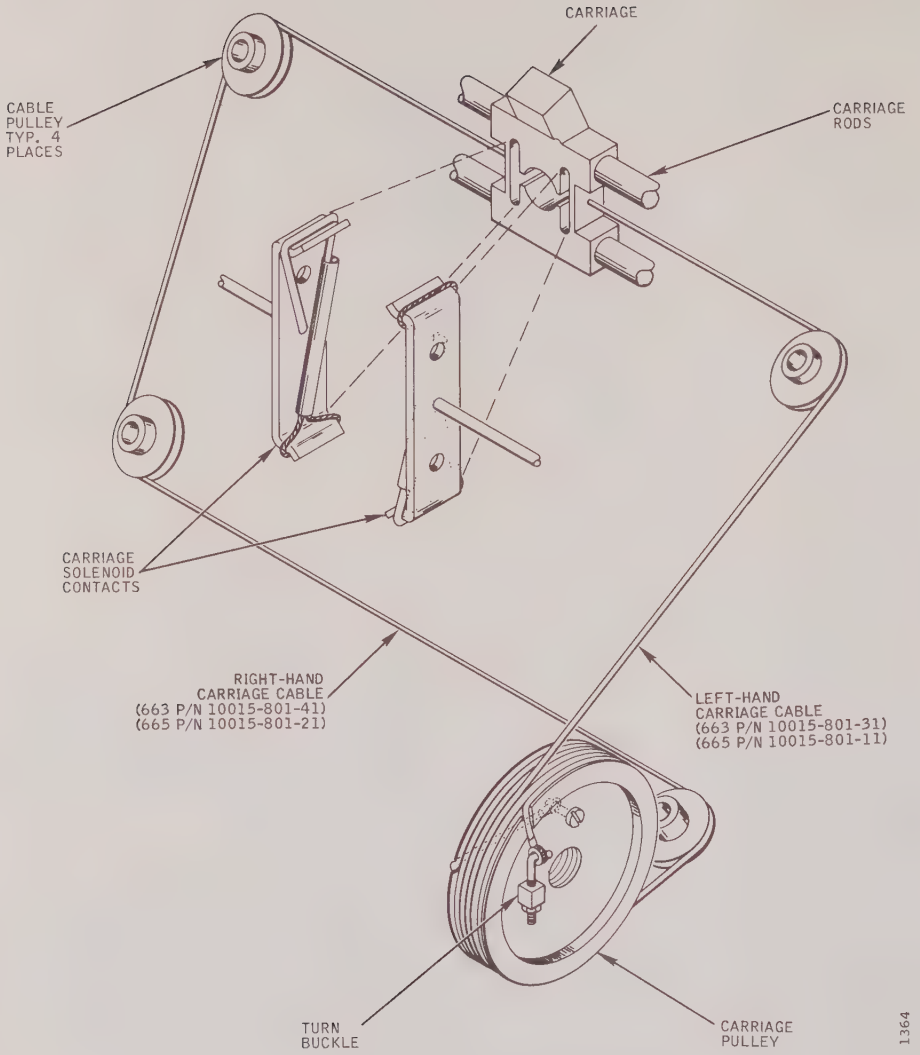


Figure 2-5. Carriage Cable Routing

5. Pull the two cables through the various cable pulleys until the two cables are completely clear of any pulleys and hang loose from the carriage assembly.

6. Remove one of the screws in the mounting bracket of either limit switch and swing the limit switch aside to facilitate removal of the carriage rods.

7. Loosen the two setscrews at each end of the carriage rods. These screws are located in the top of the plotter end plates directly over the ends of the carriage rods.

8. Hold the carriage in one hand and slide the carriage rods out through the carriage and frame at the side where the limit switch was swung out of the way.

9. Remove the cables from both sides of the carriage and discard them. This is accomplished by sliding the looped end of the cables from the carriage solenoid contacts, clipping the eyelets from the other ends of the cables, and pulling the cables through the carriage.

10. Remove the Nicopress sleeve and eyelets from the ends of the new cables. The end

sleeves are not attached permanently to the cables and should merely slip off.

11. As shown in Figure 2-5, hook the looped end of the short cable over the top carriage solenoid contact on the right side of the carriage, as viewed from back side of the carriage. Route the cable under the bottom solenoid contacts, up over the bottom contact, and through the hole in the side of the carriage.

12. Repeat this procedure with the long cable on the left side of the carriage except hook the looped end of the cable over the bottom solenoid contact instead of the top, as shown in Figure 2-5.

NOTE

Recheck this step to ensure that the proper cable has been installed on the correct side of the carriage.

13. Replace the eyelets on the ends of the cables by slipping the Nicopress sleeve back on the cable; make a loop around the eyelet, and thread the end of the cable back through the sleeve. Slide the end of the cable through the sleeve until the kink in the cable comes out the other side of the sleeve. Pull the other end of the cable to tighten the loop around the eyelet.

14. After the loop has been tightened around the eyelet, crimp the Nicopress sleeve into place using a Nicopress Tool No. 17-2 or equivalent crimping tool.

CAUTION

Before installing the carriage on the plotter, make sure that the carriage solenoid contacts have not been pushed against the metallic surface of the carriage.

15. Reinstall the carriage and carriage rods on the plotter and tighten the carriage rod setscrews. Make sure that the long cable is on the right and that the short cable is on the left. Refasten the limit switch.

16. Slide the carriage back and forth on the carriage rods to make sure that the carriage slides freely. If the carriage binds at any point, the four setscrews are not tightened evenly. Loosen these screws and retighten them a little at a time in succession.

17. Slide the carriage all the way to the left side of the plotter and route the cable on the right side of the carriage through the hole in the frame on the right side, over the top cable pulley, under the bottom cable pulley, through the slot in the bottom of the frame, and under the drum to the left side of the plotter. Bring the cable out through the left frame over the cable pulley, and connect the cable to the terminal on the inside face of the carriage pulley where the old cable was previously connected.

18. Slide the carriage pulley back onto the tapered shaft and replace the washer and nut on the shaft, but do not tighten it.

19. Slip the cable through the slot in the edge of the carriage pulley, and slowly wind the cable onto the pulley starting at the right edge of the pulley and turning the carriage pulley toward the front of the plotter. Make sure that turns do not overlap. As the cable is wound onto the pulley, the carriage will move to the left. With the carriage all the way to the left, the pulley should contain approximately four complete turns that start at the right edge of the pulley and wind toward the center.

20. Route the cable connected to the left side of the carriage out through and over the pulley in the top left frame of the plotter. Bring the cable over the top of the carriage pulley, down under, and back up around the pulley. Proceed to wind this cable onto the carriage pulley; start at the center of the pulley and wind it to the left, from front to back. After approximately one and a half turns (with the carriage still all the way to the left side), slide the other end of the cable through the slot in the left edge of the pulley and hook the cable eyelet over the hook of the turnbuckle on the side of the pulley.

21. Check the cables to ensure that they are riding properly on the various cable pulleys and tighten the turnbuckle until the cables are taut. DO NOT OVERTIGHTEN.

22. Tighten the nut on the pulley shaft and replace the two brackets holding the slipring contacts. The rear contacts go on the inside slipring and the front contact goes on the outside face of slipring. (See Figure 2-3). Make sure that good contact is made.

23. Reconnect power to the plotter and place the POWER switch in STANDBY. Place all other switches in the normal operating positions.

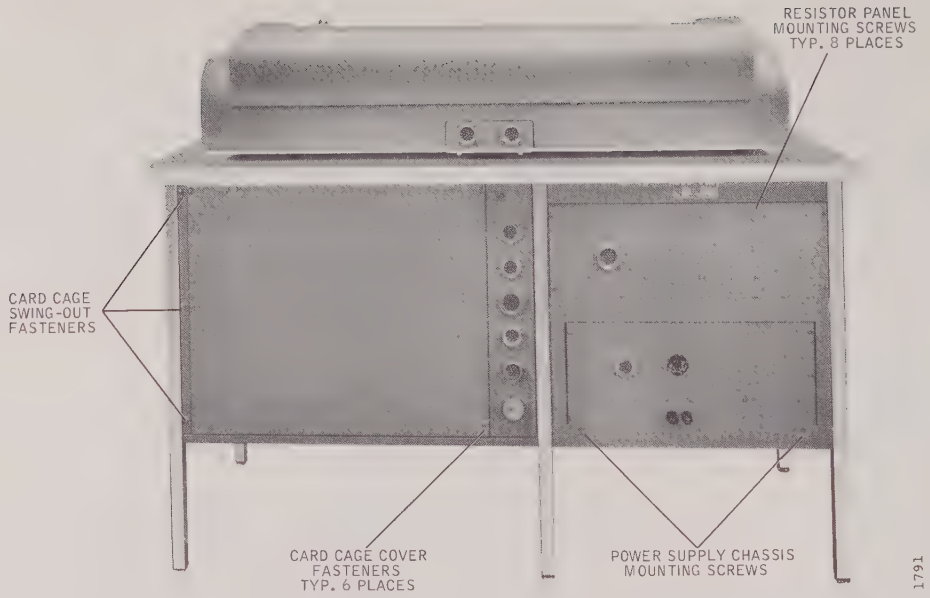


Figure 2-6. Plotter Desk Electronics, Major Assembly Removal

24. Run the carriage back and forth by using the CARRIAGE FAST switch and check to ensure that the cables wind on and off the carriage pulley properly. If any trouble is encountered, recheck the installation step by step according to this procedure until the problem is found.

25. As the final step, check the limit switch settings and readjust them if necessary.

Card Cage Cover Removal

The plug-in circuit cards are accessible from the rear, right side of the plotter desk as viewed from the front. The cover over the card cage can be removed by holding the panel in place with one hand while turning the six spring-loaded, quarter-turn fasteners to the left with the other hand (see Figure 2-6). The panel can then be removed by lifting it away from the desk.

The card cage can also be swung out for access to the rear of the circuit card connectors and wiring. This is accomplished by turning the three, quarter-turn fasteners to the left until they pop out (see Figure 2-6). The card cage can then be swung out by pulling outward on the left side of the card cage frame.

Circuit Card Removal

The plug-in circuit cards (see Table 2-2) can be removed from the slots in the card cage as follows:

1. Turn the power off.
2. Insert the round tabs on the two card puller tools in the holes located at the top and bottom front edges of the cards. Place the notch in the large curved end of the tools against the racks.
3. Gently pry the circuit card loose from its connector by lifting upward on the top tool and pushing downward on the bottom tool. After the circuit card has been disengaged from the connector, slide the card the rest of the way from the slot by hand.
4. To replace a card in the cage, slide the circuit card into the slot as far as possible. Then push firmly on the edge of the card until the board is firmly seated in the connector. All circuit cards are keyed to prevent insertion in the wrong slot. If card does not seat properly, check the key slots in the card to be sure they match the key tabs in the connector.

NOTE

Insert all circuit cards into the slots with the components side facing left.

Resistor Panel Removal

The resistor panel is located on the left rear, top side of the plotter desk as viewed from the front. Access to the components on this panel can be gained by removing this panel as follows:

1. Turn the power off and disconnect the cable from the panel.

2. Hold the panel in place with one hand and remove the eight screws and lockwashers from the outside edges of the panel (see Figure 2-6).

3. Grasp the panel with both hands and lift it out of table housing in an upward direction to prevent damaging the transistors.

Power Supply Chassis Removal

The power supply chassis is located directly beneath the drawer in the plotter desk. Removal of this chassis from the plotter desk is accomplished as follows:

1. Turn the power off and disconnect both cables from the rear panel on the power supply chassis.

2. Remove the two screws from the table frame directly below the power supply chassis (see Figure 2-6).

3. Push the power supply chassis forward a few inches. Then from the front of the table, pull the unit the rest of the way from the table housing. Be careful; do not let the chassis fall as it slides out of the table housing.

Card Cage Assembly Removal

Should the card cage frame, circuit card connectors, or wiring be damaged, it may be necessary to remove the complete card cage assembly from the desk for either repair or replacement. Removal of the card cage assembly is accomplished as follows:

1. Disconnect all cables from the connectors on the card cage connector panel.

2. Remove all circuit cards from the card cage.

3. Turn the three, quarter-turn fasteners (see Figure 2-6) to the left until they pop out, and swing the card cage outward by pulling on the left side of the card cage.

4. Hold the card cage assembly in place with one hand, pull down on the spring-loaded hinge pin, and lift the card cage out of the desk housing. Replace the card cage by repeating this procedure in the reverse order.

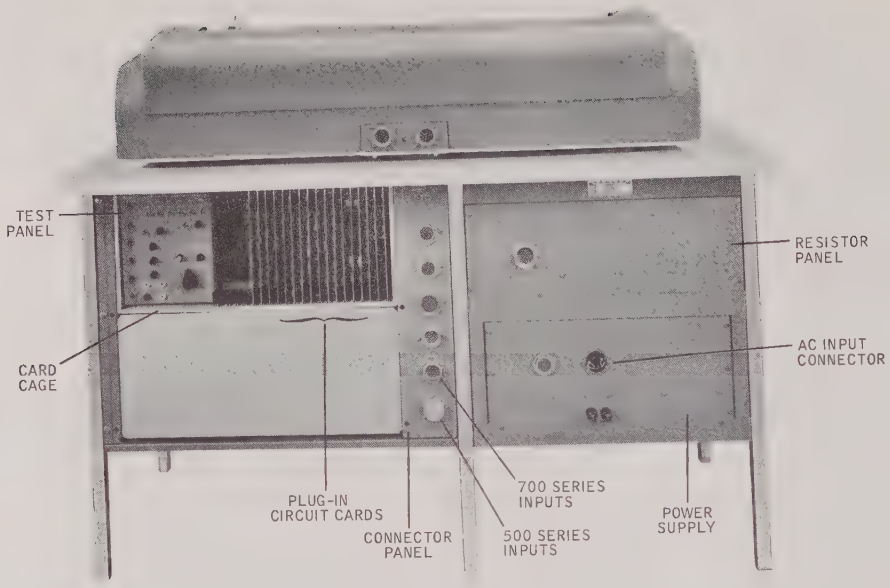


Figure 2-7. Locations of Major Electronic Components

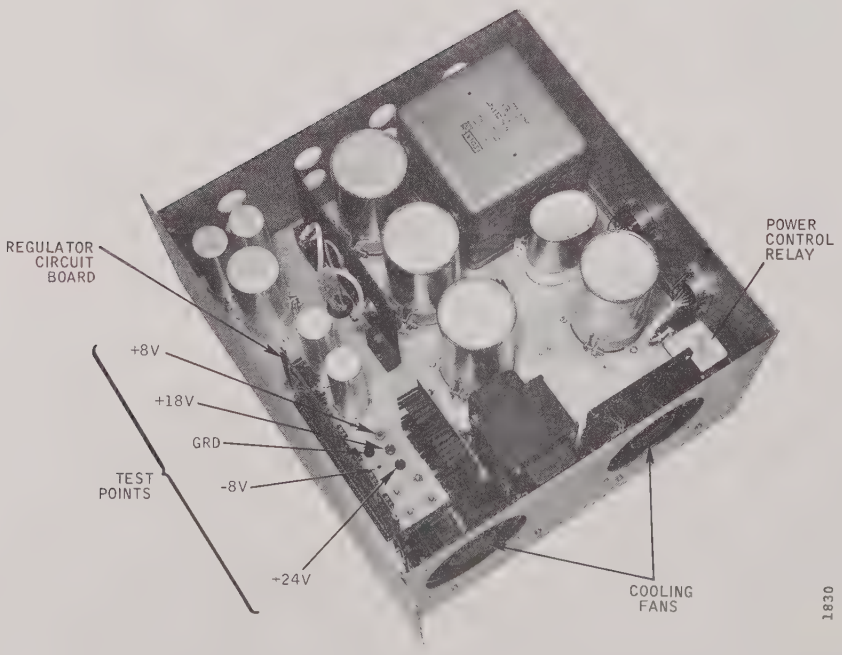


Figure 2-8. Power Supply Chassis

TABLE 2-1. TROUBLESHOOTING CHART

Symptom	Possible Cause	Corrective Action
Plotter completely inoperative, power indicator does not light.	1. Primary line fuse F1 blown. 2. Defective POWER switch. 3. Defective power control relay. 4. Loose or damaged input power connector.	1. Replace fuse. 2. Replace switch. 3. Replace power control relay on power supply chassis. 4. Inspect and tighten or replace.
Power indicator on; CHART DRIVE switch operative; all other manual controls inoperative.	1. Secondary line fuse F2 blown. 2. Regulator card on power supply chassis (Figure 2-8). Check dc voltage levels (+24v level is independent of regulator card.)	1. Replace fuse. 2. Make sure card is seated securely in connector; clean card contacts; replace board if still defective.
Intermittent plotter operation in both manual and automatic modes.	Defective ac wiring and/or loose switches or connectors.	Check ac wiring for loose, broken, or frayed wires. Check for loose or damaged switches or connectors.
Carriage does not move smoothly on rods; skips and makes short quick jumps and plotting overshoots (noticable in plotted annotations).	1. Dirty carriage rods (MOST LIKELY CAUSE.) 2. Bent or misaligned carriage rods. 3. Carriage step motor out of adjustment.	1. Operate carriage manually. If trouble persists, clean rods. 2. Remove rods and check for irregularities. Replace and carefully tighten set screws. 3. Adjust step motor.
Both chart drive motors inoperative.	1. Faulty CHART DRIVE switch. 2. Associated ac wiring defective.	1. Check switch and replace if necessary. 2. Check for broken, shorted, or frayed wires.
One chart drive motor inoperative.	Defective motor.	Check continuity of motor windings and replace if bad (see Figure 2-4).
Pen does not raise or lower either automatically or manually.	1. Pen solenoid faulty. 2. Dirty plunger. 3. Carriage cable grounded. 4. Pen circuits faulty.	1. Check continuity between key pins on pen assembly (approximately 67 ohms). 2. Clean plunger. 3. Measure voltage across slip-rings; pen up, 5.4v; pen down, -0v (see Figure 2-3). 4. Switch circuit cards J4 and J5 first; if not corrected, replace card J7.
Drum does not move smoothly; skips or locks up. (More noticable in plotting annotations.)	Drum step motor out of adjustment.	Adjust step motor.
Pen operates manually, but drum and carriage manual controls inoperative.	Faulty plotter clock circuit.	Replace clock generator circuit board (J10).

TABLE 2-1. TROUBLESHOOTING CHART (Continued)

Symptom	Possible Cause	Corrective Action
Plotter operates erratically	Faulty input network circuits.	Interchange cards J1 and J2, symptoms should change. Replace cards one at a time with new card to determine bad card.
Plotting error in one axis only; other axis ok.	Faulty control logic.	Interchange following circuit cards, one pair at a time until faulty card is located: J4 with J5 J6 with J8 J11 with J13 J14 with J17 J15 with J16
Carriage operates in one direction only.	Corresponding limit switch defective.	Check switch continuity (8.5v when actuated.)

TABLE 2-2. MODEL 665 CIRCUIT CARD COMPLEMENT

Location			
J01	Plotter Input Network	10440-502	+X, -X, -Y, TR1, TR2, TR3 } Input Networks
J02	Plotter Input Network	10440-502	-Y, +Z, -Z, TR4, TR5, TR6 } Input Networks
J03	NAND/NOR Gate	10638-502	Input signal complements } Input Networks
J04	Plotter Driver	10180-502	X-Axis step motor coil drivers and pen solenoid driver
J05	Plotter Driver	10180-502	Y-Axis step motor coil driver
J06	Flip-Flop/Logic	10156-502-11	X-Axis step motor drivers control and pen solenoid driver control
J07	Flip-Flop	10160-502-11	X-Axis and Y-Axis step motor drivers control logic and pen control
J08	Flip-Flop/Logic	10156-502-11	Y-Axis step motor drivers control logic and pen solenoid driver control
J09	Plotter Network No. 2	10847-502-11	Plotter interval clock and timing
J10	Clock Generator	10172-502-11	
J11	Logic Drivers/Inverter	10164-502-11	X-Axis step motor control logic
J12	One-Shot Multivibrator	10128-502	2nd half step delay timing and 700 series data strobe clock pulse (X and Y axes)
J13	Logic Driver/Inverter	10164-502-11	Y-Axis step motor control logic
J14	Flip-Flop/Logic	10156-502-11	X-Axis half step/full step and mode control logic
J15	Flip-Flop/Logic	10156-502-11	
J16	Flip-Flop/Logic	10156-502-11	Y-Axis half step/full step and mode control logic
J17	Flip-Flop/Logic	10156-502-11	

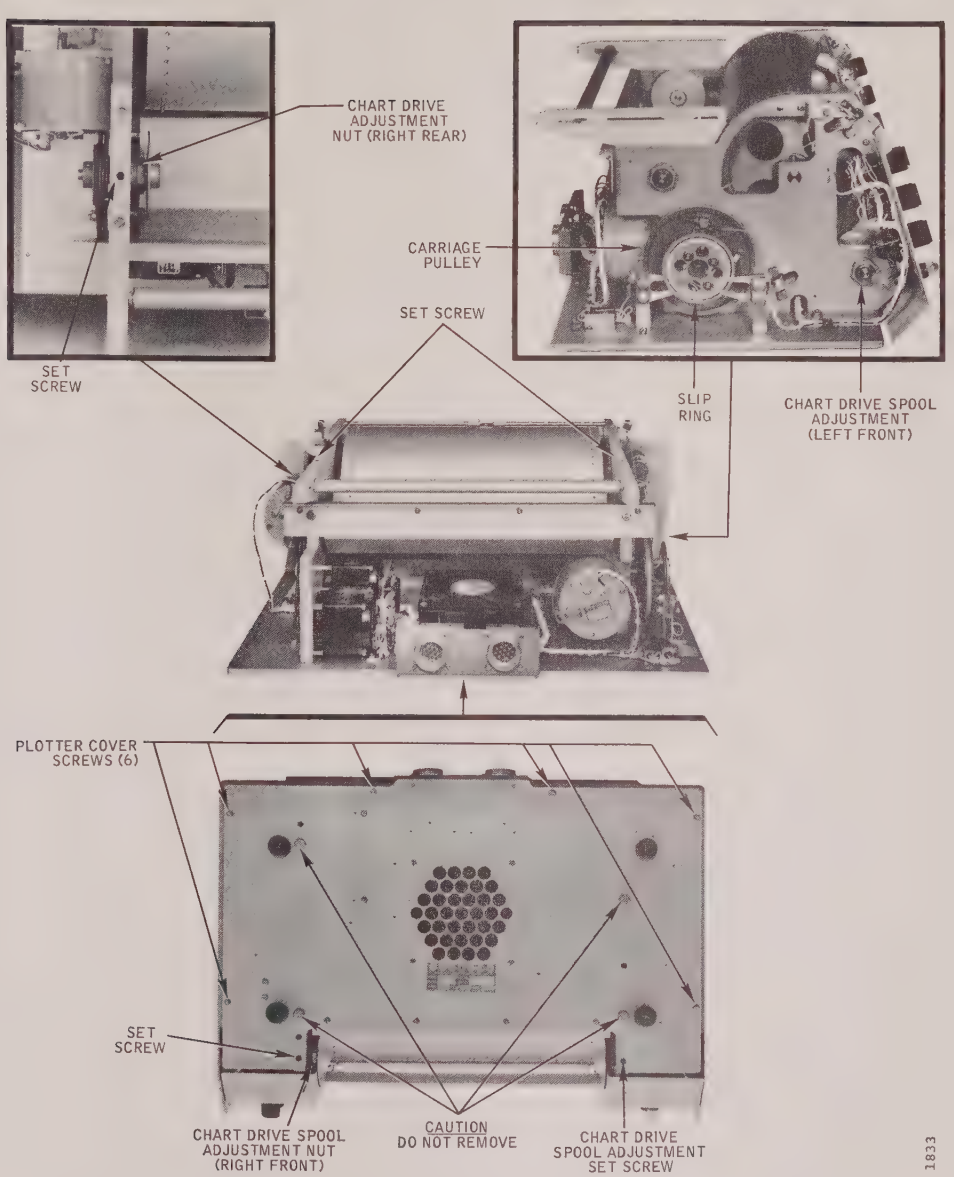
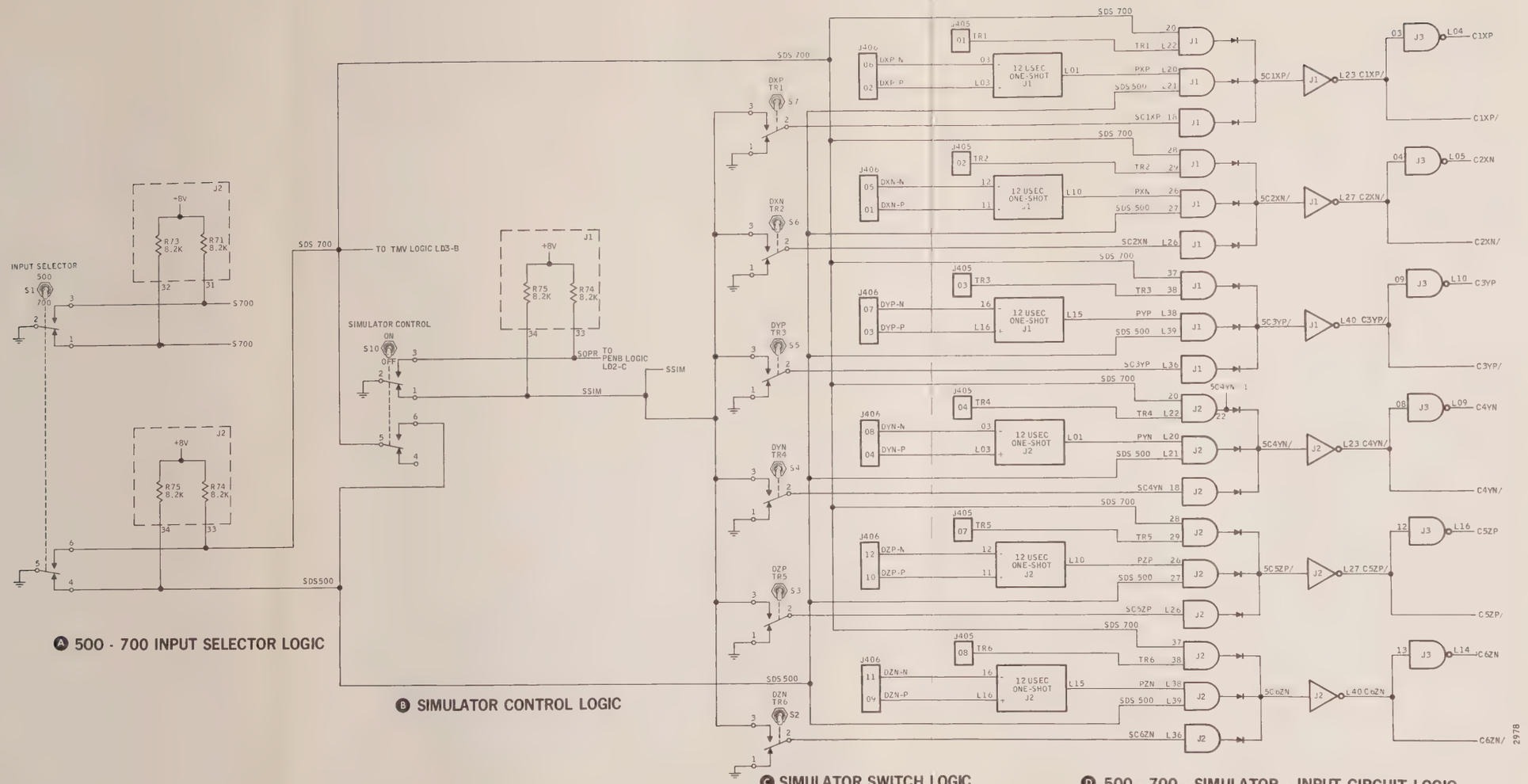


Figure 2-9. Chart Drive Spool Adjustments and Cover Removal, Model 665

SECTION 3
LOGIC DIAGRAMS

LD1



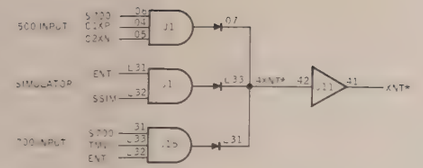
Ⓐ 500 - 700 INPUT SELECTOR LOGIC

Ⓑ SIMULATOR CONTROL LOGIC

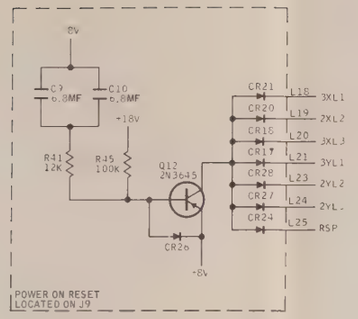
Ⓒ SIMULATOR SWITCH LOGIC

Ⓓ 500 - 700 - SIMULATOR - INPUT CIRCUIT LOGIC

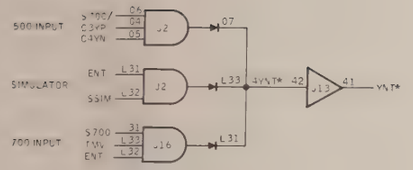
LD2



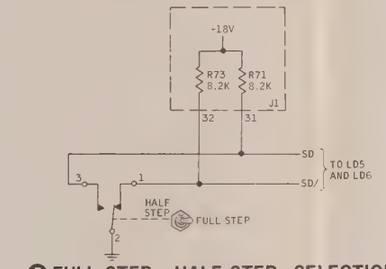
A XNT LOGIC



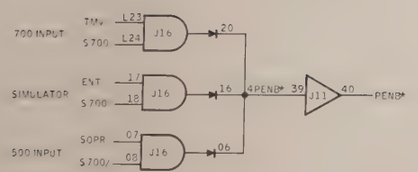
D POWER ON RESET LOGIC



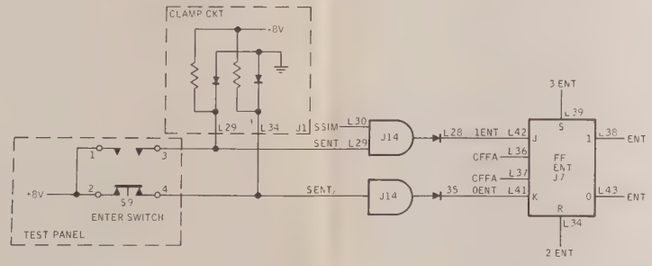
B YNT LOGIC



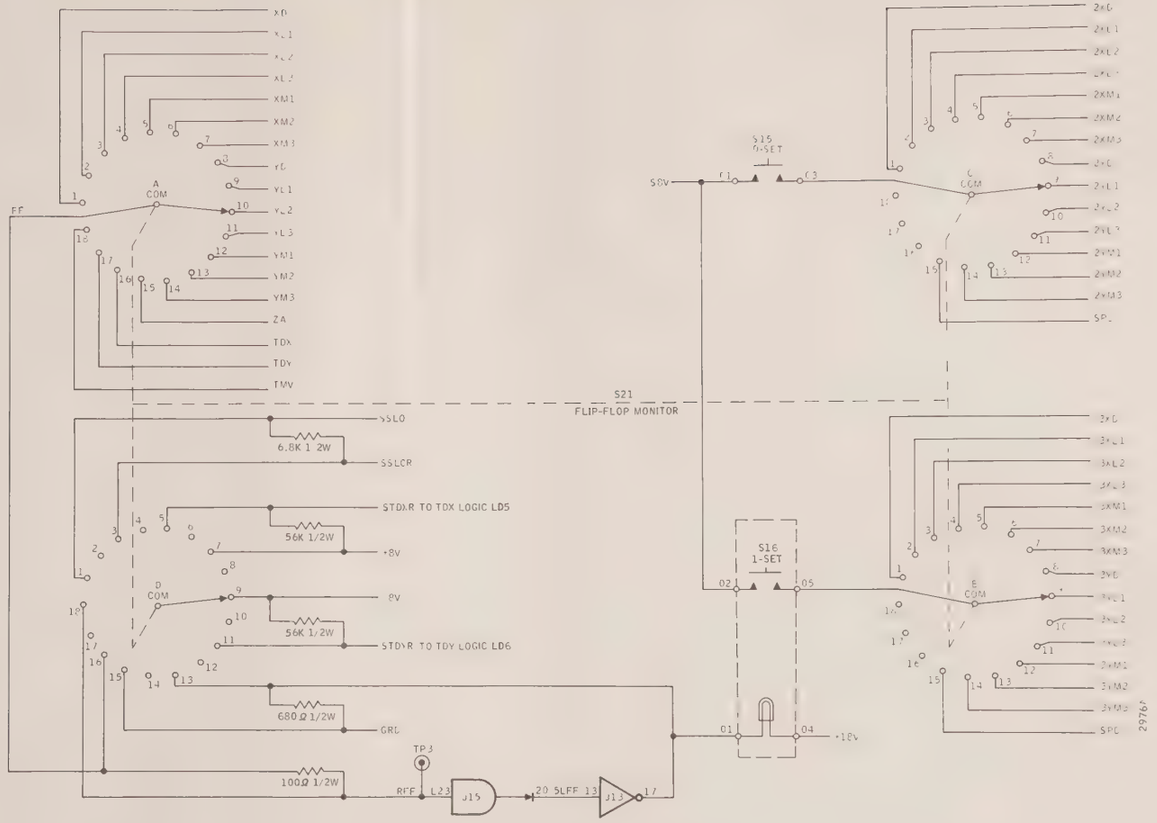
E FULL STEP - HALF STEP SELECTION



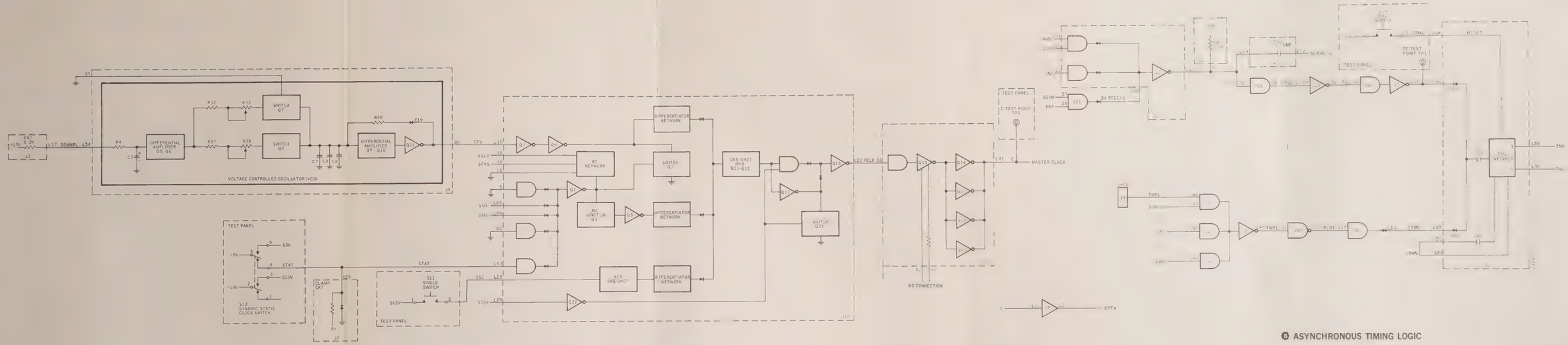
C PENB LOGIC



F ENT LOGIC

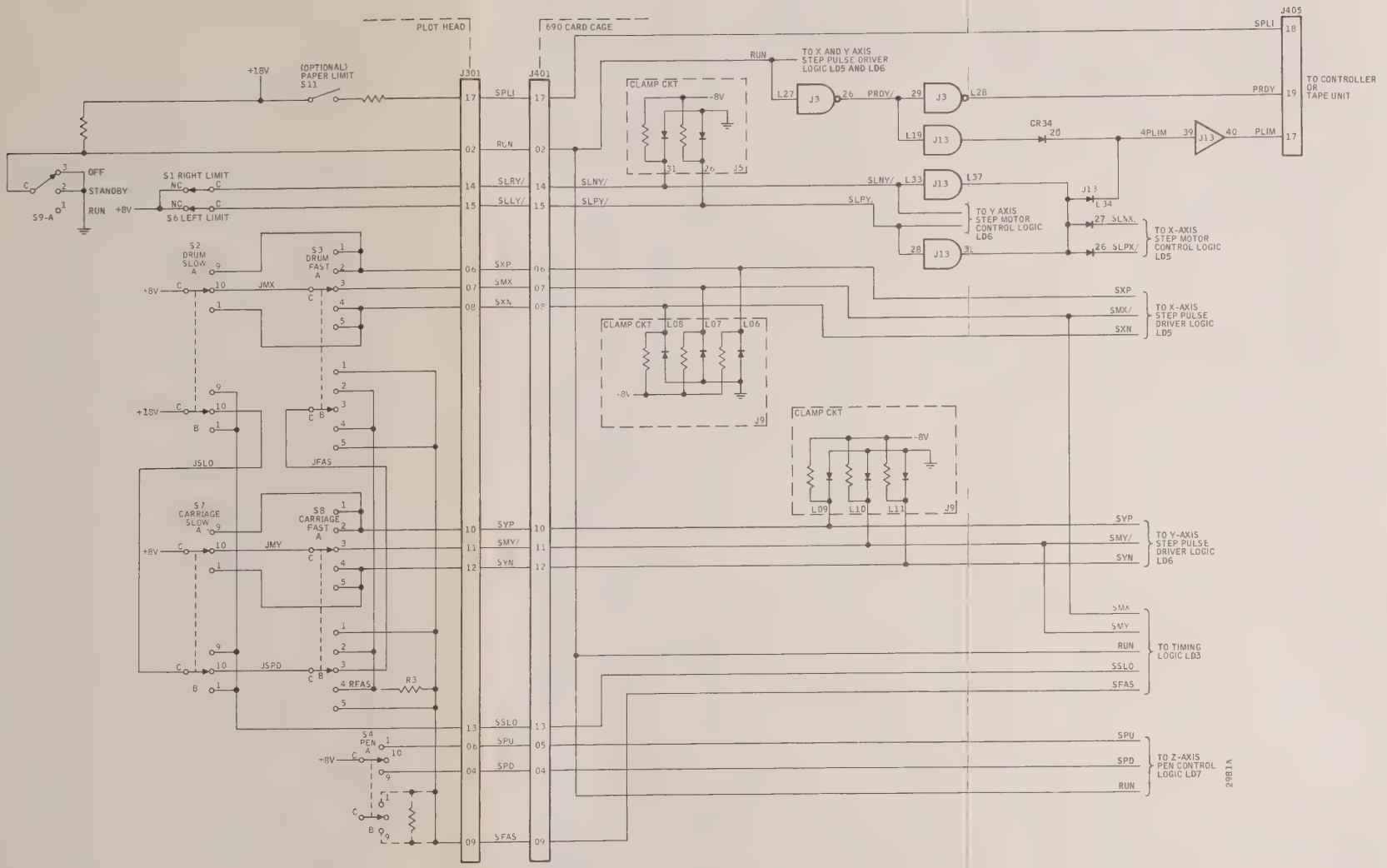


F FLIP FLOP TEST SWITCH LOGIC

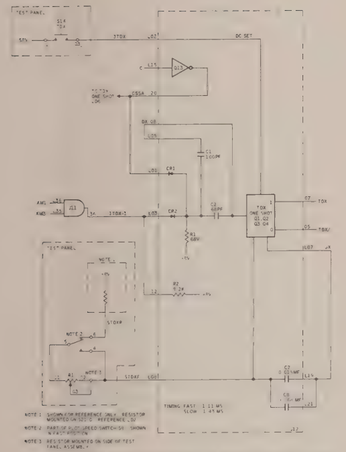


A MASTER CLOCK TIMING LOGIC

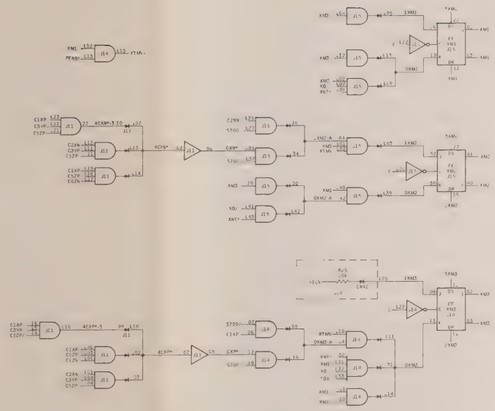
B ASYNCHRONOUS TIMING LOGIC



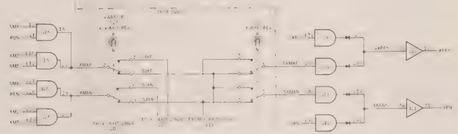
A PLOTTER CONTROL SWITCH LOGIC



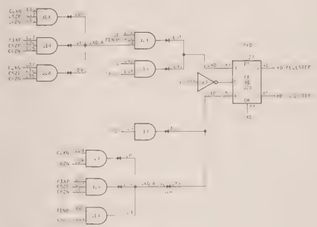
A FULL (Double Half) STEP TDX DELAY ONE SHOT LOGIC



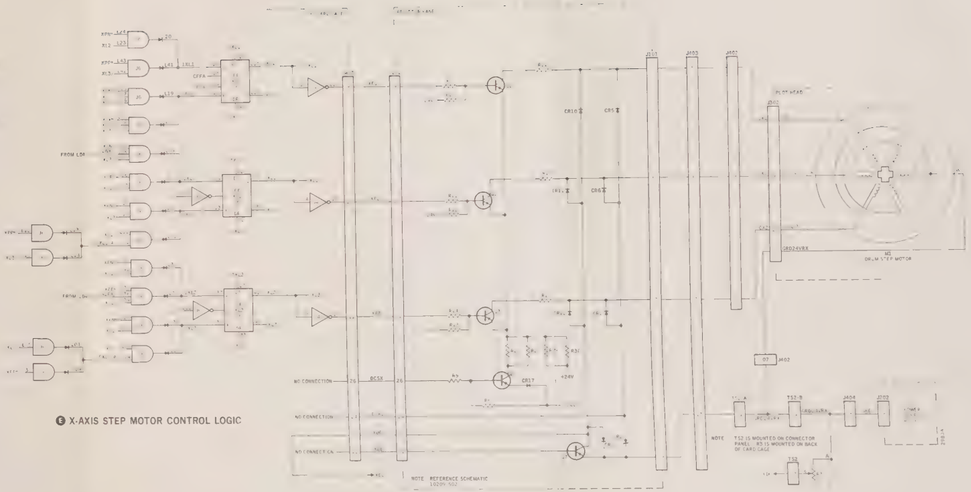
B X-AXIS DECODING AND MODE CONTROL LOGIC



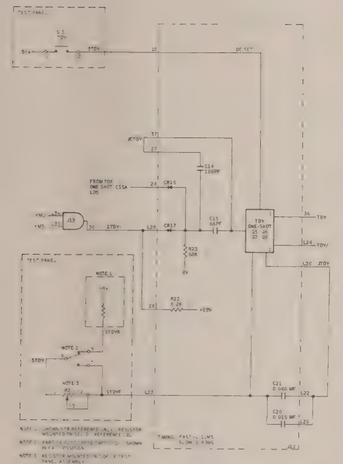
C X-AXIS REVERSING AND STEP PULSE DRIVER LOGIC



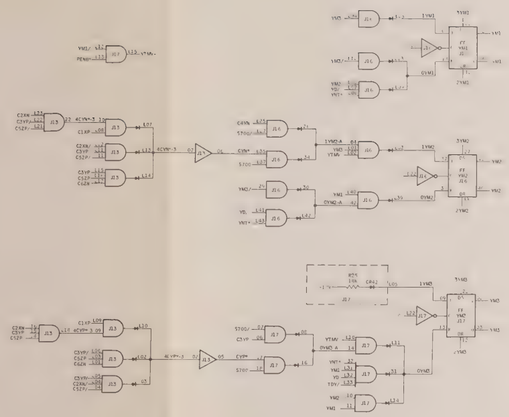
D X-AXIS HALF STEP (XD) CONTROL LOGIC



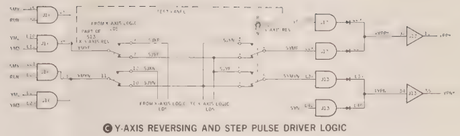
E X-AXIS STEP MOTOR CONTROL LOGIC



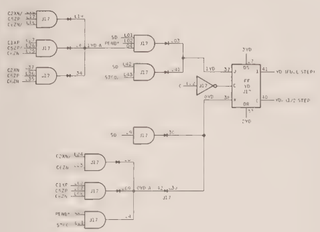
Ⓐ FULL (Double Half) STEP TDY DELAY ONE SHOT LOGIC



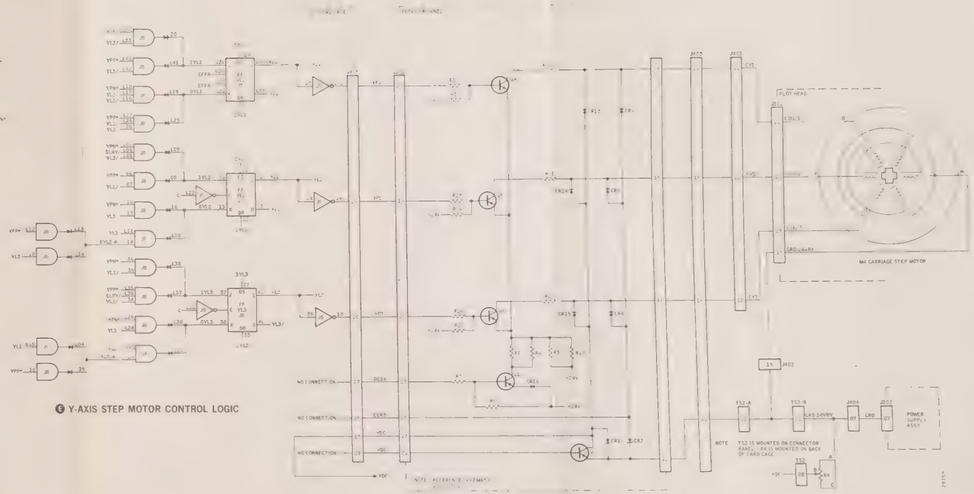
Ⓑ Y-AXIS DECODING AND MODE CONTROL LOGIC



Ⓒ Y-AXIS REVERSING AND STEP PULSE DRIVER LOGIC

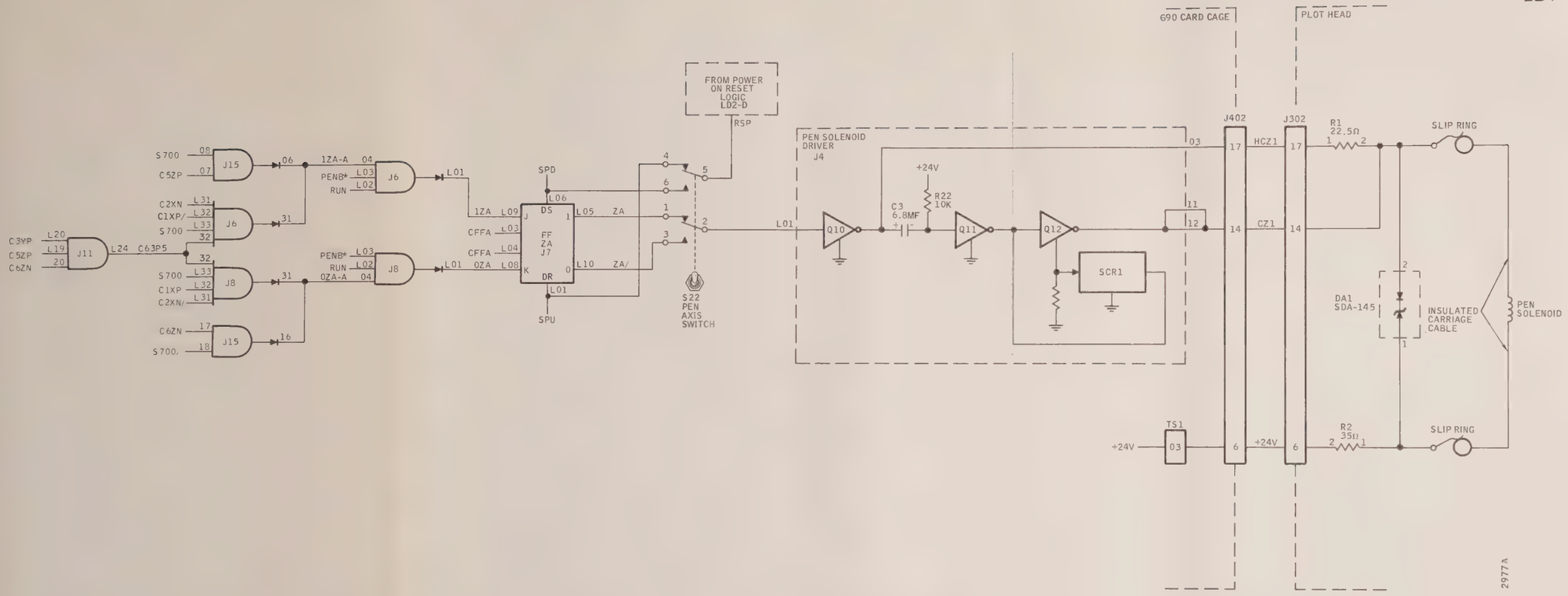


Ⓓ Y-AXIS HALF STEP (YD) CONTROL LOGIC

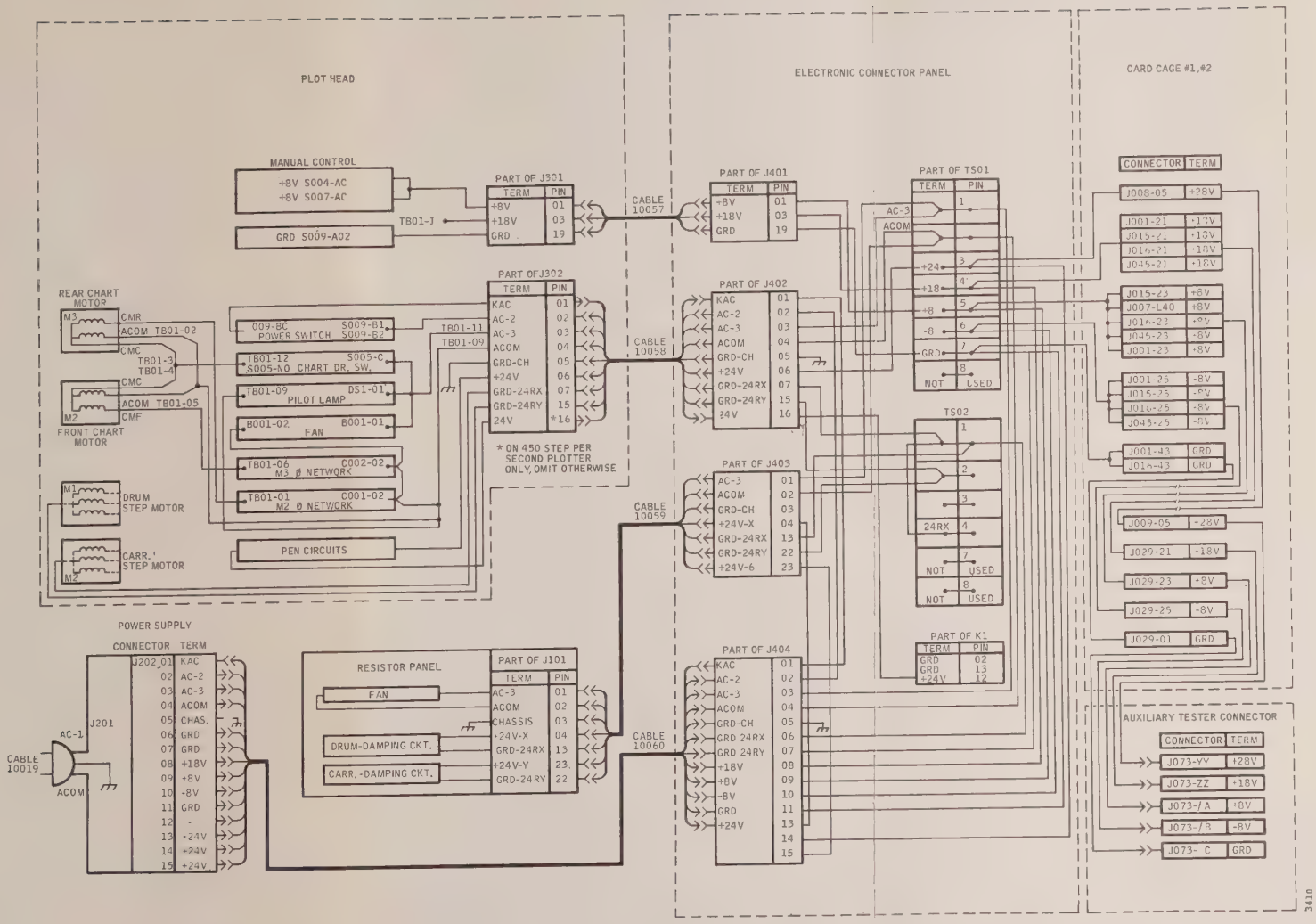


Ⓔ Y-AXIS STEP MOTOR CONTROL LOGIC

LD7



A Z AXIS CONTROL LOGIC



Power Distribution Diagram

SECTION 4
LOGIC EQUATIONS

	EQUATION	REFERENCE	FUNCTION	Q1	Q2
*	INPUT LOGIC			000010	
C1XP	= TR1 SDS/00	J003-L04	700 INPUT	000020	000030
	+ PXP SDS>00		500 INPUT	000040	000050
	+ SC1XP		SIMULATOR INPUT	000060	000070
C2XN	= TR2 SDS/00	J003-L05	700 INPUT	000080	000090
	+ PXN SDS>00		500 INPUT	000100	000110
	+ SC2XN		SIMULATOR INPUT	000120	000130
C3YP	= TR3 SDS/00	J003-L10	700 INPUT	000140	000150
	+ PYP SDS>00		500 INPUT	000160	000170
	+ SC3YP		SIMULATOR INPUT	000180	000190
C4YN	= TR4 SDS/00	J003-L09	700 INPUT	000200	000210
	+ PYN SDS>00		500 INPUT	000220	000230
	+ SC4YN		SIMULATOR INPUT	000240	000250
C5ZP	= TR5 SDS/00	J003-L16	700 INPUT	000260	000270
	+ PZP SDS>00		500 INPUT	000280	000290
	+ SC5ZP		SIMULATOR INPUT	000300	000310
C6ZN	= TR6 SDS/00	J003-L14	700 INPUT	000320	000330
	+ PZN SDS>00		500 INPUT	000340	000350
	+ SC6ZN		SIMULATOR INPUT	000360	000370
PLOT	= TMPL	J003- 20	700 INPUT	000380	000390
	+ SSIM		SIMULATOR INPUT	000400	000410

	EQUATION	REFERENCE	FUNCTION	Q1	Q2
*	DECODING LOGIC			000420	
4CXP*	= C6ZN C5ZP C1XP/	J011-L02	COMMANDS WITH +X OR +X/2	000430	000440
	+ C5ZP/ C3YP/ C1XP	J011-L10		000450	
	+ C5ZP/ C3YP/ C2XN	J011- 03		000460	
4CXN*	= C6ZN C5ZP C1XP	J011-L14	COMMANDS WITH -X OR -X/2	000470	000480
	+ C5ZP/ C3YP C2XN	J011-L13		000490	
	+ C5ZP/ C3YP C1XP	J011- 07		000500	
4CYP*	= C6ZN C5ZP C3YP/	J013-L02	COMMANDS WITH +Y OR +Y/2	000510	000520
	+ C5ZP/ C3YP/ C2XN/	J013- 03		000530	
	+ C5ZP/ C3YP C2XN C1XP	J013-L10		000540	
4CYN*	= C6ZN C5ZP C3YP	J013-L14	COMMANDS WITH -Y OR -Y/2	000550	000560
	+ C5ZP/ C3YP C2XN/	J013-L13		000570	
	+ C5ZP/ C3YP/ C2XN C1XP	J013-L07		000580	
*	MODE CONTROLS			000590	
1XM1	= XM3/	J015-L05	END FIRST XPP* OR XPN*	000600	000610
0XM1	= XM3/	J015-L13	END SECOND XPP* OR XPN*	000620	000630
	+ XM2/ XD/ XNT*	J015-L09	RETURN TO IDLE AFTER FIRST XPP* OR XPN*	000640	000650
					000660

EQUATION	REFERENCE	FUNCTION	Q1	Q2
1XM2 = XM3 X1MV-	J015-L03		000670	
(C2XN S700/	J015- 26	START NEGATIVE X SEQUENCE FOR 500 INPUT	000680	000690 000700
+CXN* S700)	J015- 34	START NEGATIVE X SEQUENCE FOR 700 INPUT	000710	000720 000730
0XM2 = XN1	J015-L39		000740	
(XM3/	J015- 30	RETURN TO IDLE AFTER SECOND XPN*	000750	000760
+XN1* XD/)	J015-L42	STEP TOWARD IDLE AFTER FIRST XPN*	000770	000780
1XM3 = 1	J014-L05	END X STEP PULSE	000790	000800
0XM3 = XTMV-	J014-L11		000810	
(C1XP S700/	J014- 08	MOVE TO FIRST XPP* FOR 500 INPUT	000820	000830
+CXP* S700)	J014- 16	MOVE TO FIRST XPP* FOR 700 INPUT	000840	000850
+ XM1 XD TDX/ XNT*	J014- 31	MOVE TO SECOND XPP* OR XPN* AFTER TIMING DELAY	000860	000870 000880
+ XM2 XM1/	J014-L14	MOVE TO FIRST XPN*	000890	000900
1YM1 = YM3/	J016-L05	END FIRST YPP* OR YPN*	000910	000920
0YM1 = YM3/	J016-L13	END SECOND YPP* OR YPN*	000930	000940
+ YM2/ YD/ YNT*	J016-L09	RETURN TO IDLE AFTER FIRST YPP* OR YPN*	000950	000960 000970
1YM2 = YM3 YTMV-	J016-L03		000980	
(C4YN S700/	J016- 26	START NEGATIVE Y SEQUENCE FOR 500 INPUT	000990	001000 001010
+ CYN* S700)	J016- 34	START NEGATIVE Y SEQUENCE FOR 700 INPUT	001020	001030 001040

EQUATION	REFERENCE	FUNCTION	Q1	Q2
0YM2 = YM1	J016-L39		001050	
(YM3/	J016- 30	RETURN TO IDLE AFTER SECOND YPN*	001060	001070
+ YD/ YNT*)	J016-L42	STEP TOWARD IDLE AFTER FIRST YPN*	001080	001090
1YM3 = 1	J017-L05	END Y STEP PULSE	001100	001110
0YM3 = YTMV-	J017-L11		001120	
(C3YP S700/	J017- 08	MOVE TO FIRST YPP* FOR 500 INPUT	001130	001140
+ CYP* S700)	J017- 16	MOVE TO FIRST YPP* FOR 700 INPUT	001150	001160
+ YM1 YD TDY/ YNT*	J017- 31	MOVE TO SECOND YPP* OR YPN* AFTER TIMING DELAY	001170	001180 001190
+ YM2 YM1/	J017-L14	MOVE TO FIRST XPN*	001200	001210
* STEP PULSE DRIVERS			001220	
4XPP* = SXMXP	J011-L28	+X PULSE FROM MODE CONTROL	001230	001240
+ SXP	J011-L29	+X PULSE FROM DRUM MANUAL SWITCHES	001250	001260
4XPN* = SXMXN	J011-L39	-X PULSE FROM MODE CONTROL	001270	001280
+ SXN	J011-L40	-X PULSE FROM DRUM MANUAL SWITCHES	001290	001300
4YPP* = SYMYP	J013-L28	+Y PULSE FROM MODE CONTROL	001310	001320
+ SYP	J013-L29	+Y PULSE FROM CARRIAGE MANUAL SWITCHES	001330	001340
4YPN* = SYMYN	J013-L39	-Y PULSE FROM MODE CONTROL	001350	001360
+ SYN	J013-L40	-Y PULSE FROM CARRIAGE MANUAL SWITCHES	001370	001380

	EQUATION	REFERENCE	FUNCTION	Q1	Q2
*	MOTOR CONTROLS			001390	
1XL1	= XL2/ XPN*	J006- 20	STEP IN -X DIRECTION	001400	001410
	+ XL3/ XPP*	J006-L41	STEP IN +X DIRECTION	001420	001430
0XL1	= XL3/ XL2 XPN*	J006-L19	STEP IN -X DIRECTION	001440	001450
	+ XL3 XL2/ XPP*	J006-L25	STEP IN +X DIRECTION	001460	001470
3XL1	= POWER ON	J009-L18	POWER TURN-ON RESET	001480	001490
1XL2	= XL3/ XPN* SLNX/	J006-L09	STEP IN -X DIRECTION IF NOT AT -X LIMIT	001500	001510 001520
	+ XL1/ XPP*	J006- 08	STEP IN +X DIRECTION	001530	001540
0XL2	= XL3 XPN*	J006- 16	STEP IN -X DIRECTION	001550	001560
	+ XL1	J006-L10		001570	
	(XPP*	J006-L13	STEP IN +X RESET FROM ALL COILS ON	001580	001590
	+ XL3)	J006-L14		001600	
2XL2	= POWER ON	J009-L19	POWER TURN-ON RESET	001610	001620
1XL3	= XL1/ XPN*	J006-L38	STEP IN -X DIRECTION	001630	001640
	+ XL2/ XPP* SLPX/	J006-L37	STEP IN +X DIRECTION IF NOT AT +X LIMIT	001650	001660 001670
0XL3	= XL1 XPN*	J006-L30	STEP IN -X DIRECTION	001680	001690
	+ XL2	J006-L21		001700	
	(XPP*	J006- 29	STEP IN +X, RESET FROM ALL COILS ON	001710	001720
	+ XL1)	J006-L04		001730	

	EQUATION	REFERENCE	FUNCTION	Q1	Q2
2XL3	= POWER ON	J009-L20	POWER TURN-ON RESET	001740	001750
1YL1	= YL2/ YPN*	J008- 20	STEP IN -Y DIRECTION	001760	001770
	+ YL3/ YPP*	J008-L41	STEP IN +Y DIRECTION	001780	001790
0YL1	= YL3/ YL2 YPN*	J008-L19	STEP IN -Y DIRECTION	001800	001810
	+ YL3 YL2/ YPP*	J008-L25	STEP IN +Y DIRECTION	001820	001830
3YL1	= POWER ON	J009-L21	POWER TURN-ON RESET	001840	001850
1YL2	= YL3/ YPN* SLNY/	J008-L09	STEP IN -Y DIRECTION IF NOT AT -Y LIMIT	001860	001870 001880
	+ YL1/ YPP*	J008- 08	STEP IN +Y DIRECTION	001890	001900
0YL2	= YL3 YPN*	J008- 16	STEP IN -Y DIRECTION	001910	001920
	+ YL1	J008-L10		001930	
	(YPP*	J008-L13	STEP IN +Y, RESET FROM ALL COILS ON	001940	001950
	+ YL3)	J008-L14		001960	
2YL2	= POWER ON	J009-L23	POWER TURN-ON RESET	001970	001980
1YL3	= YL1/ YPN*	J008-L38	STEP IN -Y DIRECTION	001990	002000
	+ YL2/ YPP* SLPY/	J008-L37	STEP IN +Y DIRECTION IF NOT AT +Y LIMIT	002010	002020 002030
0YL3	= YL1 YPN*	J008-L30	STEP IN -Y DIRECTION	002040	002050
	+ YL2	J008-L21		002060	
	(YPP*	J008- 29	STEP IN +Y, RESET FROM ALL COILS ON	002070	002080
	+ YL1)	J008-L04		002090	

EQUATION	REFERENCE	FUNCTION	Q1	Q2
2YL3 = POWER ON	J009-L24	POWER TURN-ON RESET	002100	002110
* PEN CONTROL FLIP-FLOP			002120	
1ZA = RUN PENB*	J006-L01		002130	
(C5ZP S700/	J015- 06	500 SERIES PEN DOWN COMMAND	002140	002150
+ C63P5- C2XN C1XP/ S700)	J006- 31	700 SERIES PEN DOWN COMMAND	002160	002170
0ZA = RUN PENB*	J008-L01		002180	
(C6ZN S700/	J015- 16	500 SERIES PEN UP COMMAND	002190	002200
+ C63P5- C2XN/ C1XP S700)	J008- 31	700 SERIES PEN UP COMMAND	002210	002220
2ZA = SPU	J007-L01	MANUAL PEN UP SIGNAL	002230	002240
+ RSP (S22 NORMAL)		POWER TURN-ON RESET	002250	002260
3ZA = SPD	J007-L06	MANUAL PEN DOWN SIGNAL	002270	002280
+ RSP (S22 REVERSE)		POWER TURN-ON RESET	002290	002300
* HALF-STEP CONTROL			002310	
1XD = PENB* SD	J014-L03		002320	
(C6ZN/ C5ZP/ C2XN	J014-L19	00010, 00011 700 COMMANDS	002330	002340
+ C6ZN/ C5ZP/ C1XP	J014- 26	00101, 00111 700 COMMANDS	002350	002360
+ C6ZN C5ZP C2XN/)	J014- 34	11000, 11001, 11100, 11101 700 COMMANDS	002370	002380 002390
+ SD S700/	J014-L41	500 FULL STEP	002400	002410

EQUATION	REFERENCE	FUNCTION	Q1	Q2
0XD = PENB* S/00	J014-L39		002420	002430
(C6ZN C2XN	J014- 20	10010, 10011, 10110, 10111, 11010, 11011, 11110, 11111 700 COMMANDS	002440	002450 002460
+ C6ZN C5ZP/ C1XP)	J014-L09	10001, 10101 700 COMMANDS	002470	002480
+ SD/	J014- 30	500 HALF STEP	002490	002500
1YD = PENB* SD	J017-L03		002510	002520
(C6ZN/ C5ZP/ C2XN/	J017-L19	00000, 00100, 00101 700 COMMANDS	002530	002540
+ C6ZN/ C5ZP/ C1XP	J017- 26	00111, 00001, 00011 700 COMMANDS	002550	002560
+ C6ZN C5ZP C2XN)	J017- 34	11010, 11011, 11110, 11111 700 COMMANDS	002570	002580 002590
+ SD S700/	J017-L41	500 FULL STEP	002600	002610
0YD = PENB* S/00	J017-L39		002620	002630
(C6ZN C2XN/	J017- 20	10000, 11101, 10100, 11100, 11000, 11001 700 COMMANDS	002640	002650 002660
+ C6ZN C5ZP/ C1XP)	J017-L09	10001, 10011, 10101, 10111 700 COMMANDS	002670	002680 002690
+ SD/	J017- 30	500 HALF STEP	002700	002710
* ENT FLIP-FLOP AND PRIMARY GATES			002720	002730
1ENT = SENT SSIM	J014-L28	ENTER BUTTON DEPRESSED DURING SIMULATOR OPERATION	002740	002750 002760
0ENT = SENT/	J014- 35	ENTER BUTTON RELEASED	002770	002780
XMXP- = XM3/ XM2/ SMX/ RUN	J015- 14	PRIMARY AND GATE DENOTING +X SIGNAL	002790	002800
	J015- 15	FROM MODE CONTROL	002810	002820

EQUATION	REFERENCE	FUNCTION	Q1	Q2
XMXN- = XM3/ XM2 SMX/ RUN	J015- 24 J015- 28	PRIMARY AND GATE DENOTING -X SIGNAL FROM MODE CONTROL	002830 002850	002840 002860
YMYP- = YM3/ YM2/ SMY/ RUN	J016- 14 J016- 15	PRIMARY AND GATE DENOTING +Y SIGNAL FROM MODE CONTROL	002870 002890	002880 002900
YMYN- = YM3/ YM2 SMY/ RUN	J016- 24 J016- 28	PRIMARY AND GATE DENOTING -Y SIGNAL FROM MODE CONTROL	002910 002930	002920 002940
C63P5- = C6ZN/ C5ZP C3YP/	J011-L24	PRIMARY AND GATE FOR DECODING	002950	002960
XTMV- = XM1/ PENB*	J014-L15	PRIMARY AND GATE FOR MODE CONTROL	002970	002980
YTMV- = YM1/ PENB*	J017-L15	PRIMARY AND GATE FOR MODE CONTROL	002990	003000
* LOGIC DRIVERS AND ONE-SHOTS			003010	
4XNT* = S700 TMV/ ENT/	J015-L31	700 SERIES X-AXIS MODE CONTROL INTERLOCK	003020	003030 003040
+ S700/ C1XP/ C2XN/	J001- 07	500 SERIES X-AXIS MODE CONTROL INTERLOCK	003050	003060 003070
+ SSIM ENT/	J001-L33	SIMULATOR SERIES X-AXIS MODE CONTROL INTERLOCK	003080	003090 003100

EQUATION	REFERENCE	FUNCTION	Q1	Q2
4YNT* = S700 TMV/ ENT/	J016-L31	700 SERIES Y-AXIS MODE CONTROL INTERLOCK	003110	003120 003130
+ S700/ C3YP/ C4YN/	J002- 07	500 SERIES Y-AXIS MODE CONTROL INTERLOCK	003140	003150 003160
+ SSIM ENT/	J002-L33	SIMULATOR SERIES Y-AXIS MODE CONTROL INTERLOCK	003170	003180 003190
4PENB* = S700 TMV	J016- 20	700 SERIES DATA SAMPLING ENABLE	003200	003210
+ S700/ SOPR	J016- 06	500 SERIES DATA SAMPLING ENABLE	003220	003230
+ S700/ ENT	J016- 16	SIMULATOR SERIES DATA SAMPLING ENABLE	003240	003250
1TDX-1 = XM1/ XM3/	J011- 36	FIRST X PULSE	003260	003270
1TDY-1 = YM1/ YM3/	J013- 36	FIRST Y PULSE	003280	003290
1TMV = PLOT	J015-L19	700 SERIES DATA SAMPLING ONE SHOT	003300	003310
(CP-TMV = TC)		TAPE CLOCK TRIGGER	003320	003330

SECTION 5
PARTS LIST

Drawing Number	Title	Used On 663	Used On 665
Plot Head			
10068-101	Incremental Mode Plot Head, 12-Inch		X
10069-101	Incremental Mode Plot Head, 30-Inch	X	
10098-310	Plotter Sub Assy (765)		X
10101-310	Plotter Sub Assy (763)	X	
10084-401	Wiring Harness (765)		X
10086-401	Wiring Harness (763)	X	
10244-502	Terminal Bd. No. 1 Series 700 Plotter	X	X
Table			
10067-101	690 Electronics	X	X
10007-402	Power Supply–765	X	X
10433-203	Heat Sink Assy	X	X
10832-203	Resistor Panel Assy	X	X
11610-203	Sub Assy–690 Electronics	X	X
11620-203	Sub Assy–690 Test Panel	X	X

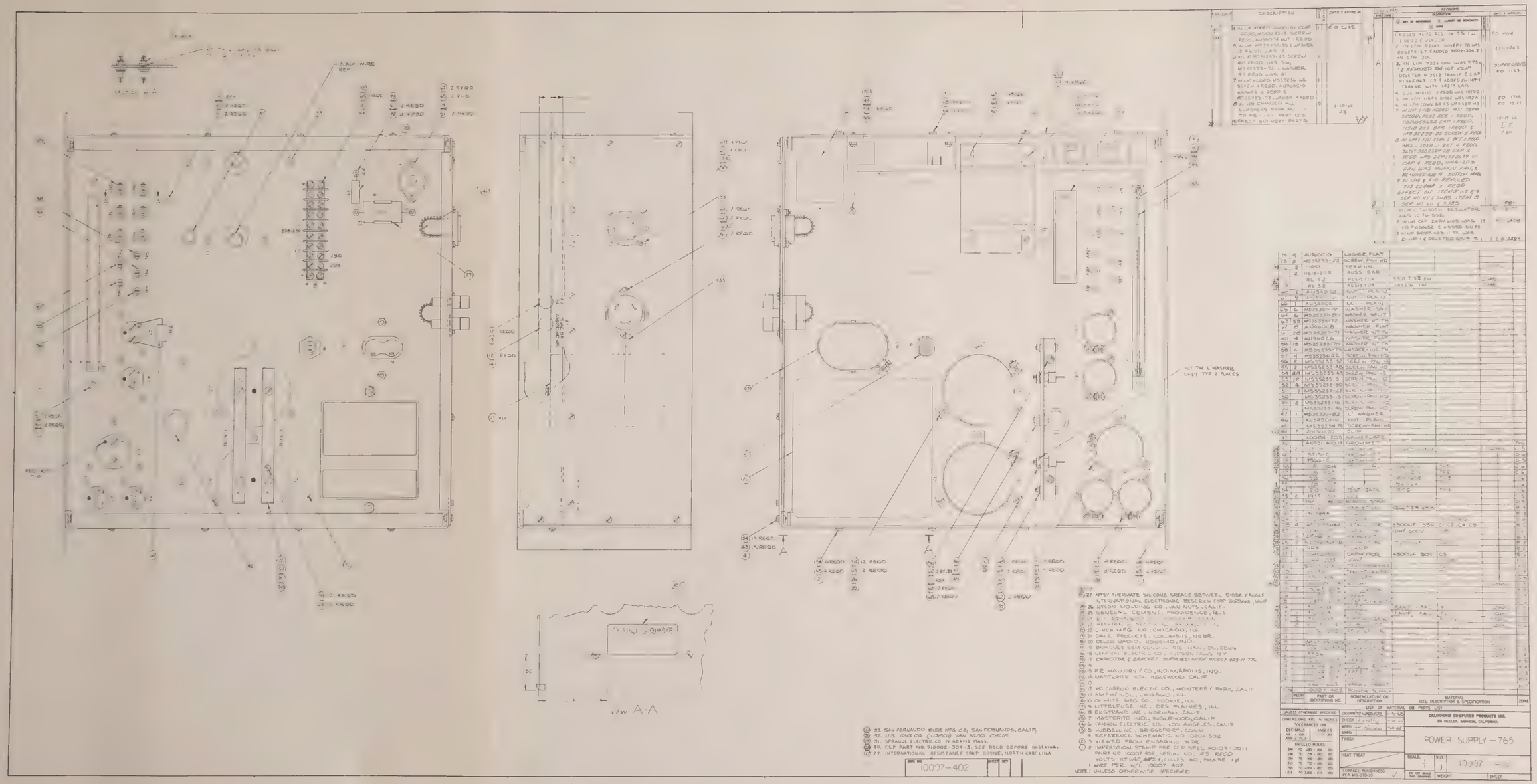
NOTE
See Figure 2-5 for replacement carriage cable part numbers.

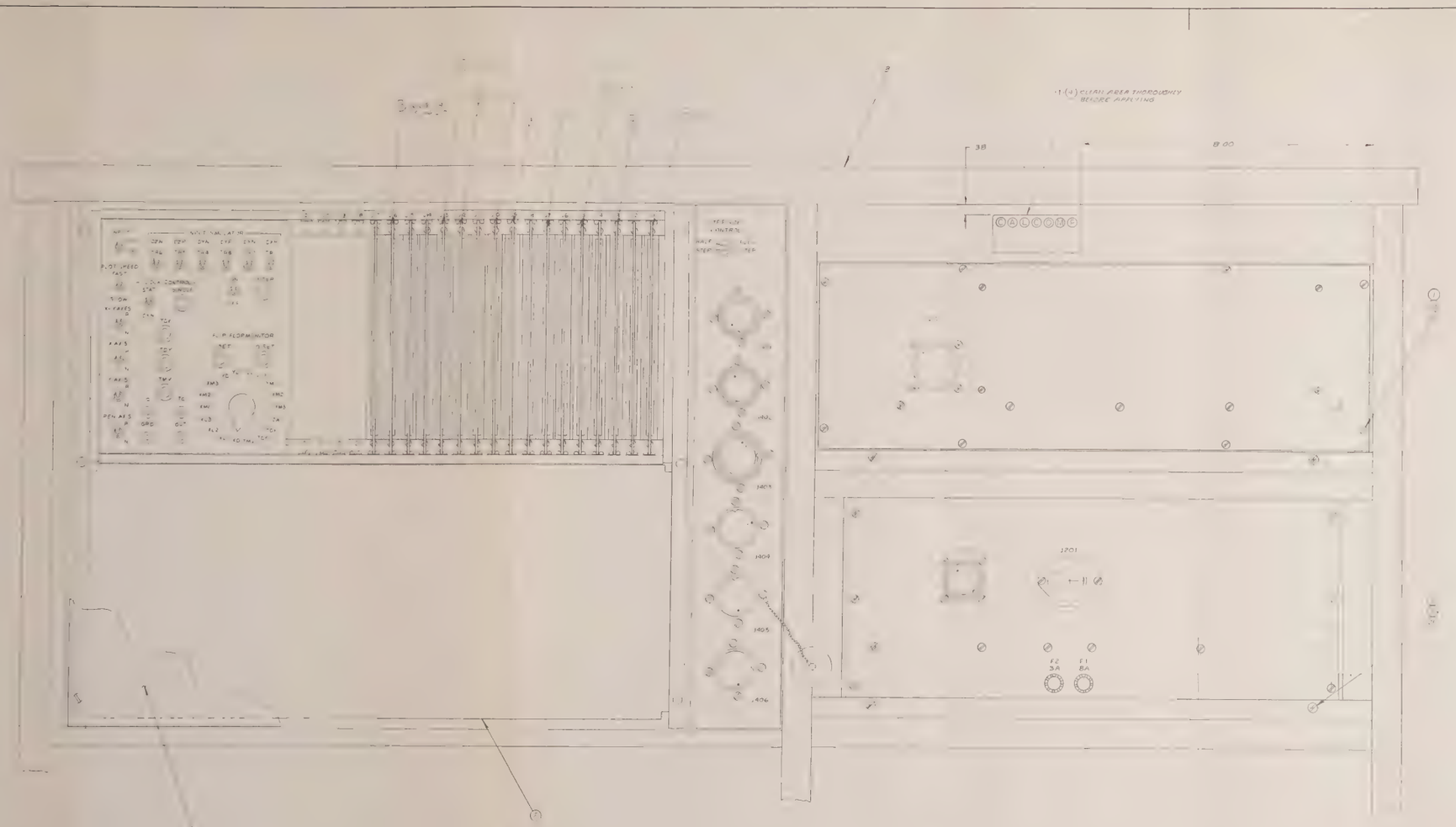
TABLE 5-1. MODEL 663 PLOTTER LOOSE EQUIPMENT

Quantity	Part No.	Description
1	10070-101	Pen Accessories Kit
1	Bulletin 211	Chart Paper Catalog
1	11148-203-21	Plotter Cover
1	302 Red	Chart Paper (Roll)
1	3010B	Chart Paper (Roll)
1	67-147	Paper Roll Core
2	10020-901-001	Operation Manual
1	10020-901-002	663/665 Maintenance Manual

TABLE 5-2. MODEL 665 PLOTTER LOOSE EQUIPMENT

Quantity	Part No.	Description
1	10070-101	Pen Accessories Kit
1	Bulletin 211	Chart Paper Catalog
1	11148-203-11	Plotter Cover
1	02 Red	Chart Paper (Roll)
1	020B	Chart Paper (Roll)
1	00	Chart Paper (Roll)
1	20-152	Paper Roll Core
2	10021-901-001	Operation Manual
1	10020-901-002	663/665 Maintenance Manual


VIEW A-A
REVISIONS
DESCRIPTION
DATE & APPROVAL
MATERIAL
SIZE, DESCRIPTION & SPECIFICATION
ZONE
NOMENCLATURE OR DESCRIPTION
PART OR IDENTIFYING NO.
LIST OF MATERIAL OR PARTS LIST
CALIFORNIA COMPUTER PRODUCTS INC.
POWER SUPPLY — 765
10007-402
DRAWN
CHECK
APPD.
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10
WEIGHT
SHEET
SCALE
SIZE
DO NOT SCALE THIS DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS
ANGLES
DRILLED HOLES
32. SAN FERNANDO ELEC MFG CO, SAN FERNANDO, CALIF
31. SPRAGUE ELECTRIC CO. N ADAMS MASS.
30. CCP PART NO. 910002-304-3, SEE DSCD BEFORE ORDERING.
29. INTERNATIONAL RESISTANCE CORP BOONE, NORTH CARLINA
27 APPLY THERMATE SILICONE GREASE BETWEEN DIODE FAGLE
NYLON MOLDING CO., VAN NUYS, CALIF.
GENERAL CEMENT, PROVIDENCE, R.I.
CINCH MFG CO., CHICAGO, ILL.
DALE PRODUCTS, COLUMBUS, NEBR.
DELCO RADIO, KOKOMO, IND.
BRADLEY SEMICONDUCTOR, NEW HAV., CONN
GENERAL ELECTRIC CO., HUDSON FALLS, N.Y.
CAPACITOR & BRACKET SUPPLIED WITH 910007-405-11 TX.
P.R. MALLORY & CO., INDIANAPOLIS, IND.
MASTERITE IND., INGLEWOOD CALIF
W.C. CARRON ELECTIC CO., MONTEREY PARK, CALIF
AMPHENOL, CHICAGO, ILL.
CHIMITE MFG CO., SKOKIE, ILL.
LITTELFUSE, INC., DES PLAINES, ILL.
ECKSTAND, INC., NORWALK, CALIF.
MASTERITE IND., INGLEWOOD, CALIF.
(RANDOM ELECTRIC CO., LOS ANGELES, CALIF
HUBBELL INC., BRIDGEPORT, CONN
REFERENCE SCHEMATIC NO 10204-502
VIEWED FROM ENGAGING END
IMPRESSION STAMP PER CCP SPEC A0104-001; PART NO 10007-402, SERIAL NO: AS REQD
VOLTS: 115 VAC, AMPS: 6, CYCLES 60, PHASE 1 Ø
1 WIRE PER W/L 10007-402
NOTE: UNLESS OTHERWISE SPECIFIED



REVISIONS			
ZONE	DESCRIPTION		DATE & APPROVAL
	☐ MAY BE REPROCESSED ☐ CANNOT BE REPROCESSED ☐ NONE		
	1 IN LAM 10038-502 MOD. "AB" DELETE MOD LAM 10038-502 "AB" 2 IN LAM AA0019-B01 "CABLE, PLOTTER, MODEL 2000" ECR'S 629 CHGE. 3 IN LAM 10067-502-11 PLOTTER METAL LAMS 10170-502-11 EFFECT ON: ITEMS 62 RECORD CHANGE, ITEM 3 NEXT PARTS		6/29/70

ITM	QTY	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
26	6	MS35333-71	LOCKWASHER	#8	
25	18	MS35333-70	LOCKWASHER	#10	
21	A	MS35275-43	SCREW	8-32 X 1.8	
20	B	MS35233-28	SCREW	6-32 X 3.8	
18		10040-705	CABLE ASSY		
16	2	10490-502	INPUT NPN		
15	2	10180-502	PLOTTER DRIVE		
14	1	10067-502	PLOTTER WIRE		
13	1	10176-502	CLOCK GEN		
12	2	10169-502-11			
11	1	0140-203			
4	1	0140-203	P.C. ASSY. ELEC.		
3	1	7951-203	RESISTOR PANEL		
ITM NO.	REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS / ANGLES
XX ±.03 / ±.5°
XXX ±.010

DRILLED HOLES
.040 TO .095 = .002
.136 TO .228 = .003
.234 TO .350 = .004
.353 TO .755 = .005
.765 TO 1.020 = .007
1.015 TO 1.500 = .010

DRAWN
CHK'D
APP'D
APP'D
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL STD 10

CALIFORNIA COMPUTER PRODUCTS INC.
305 MUNDEN AVENUE, CALIFORNIA

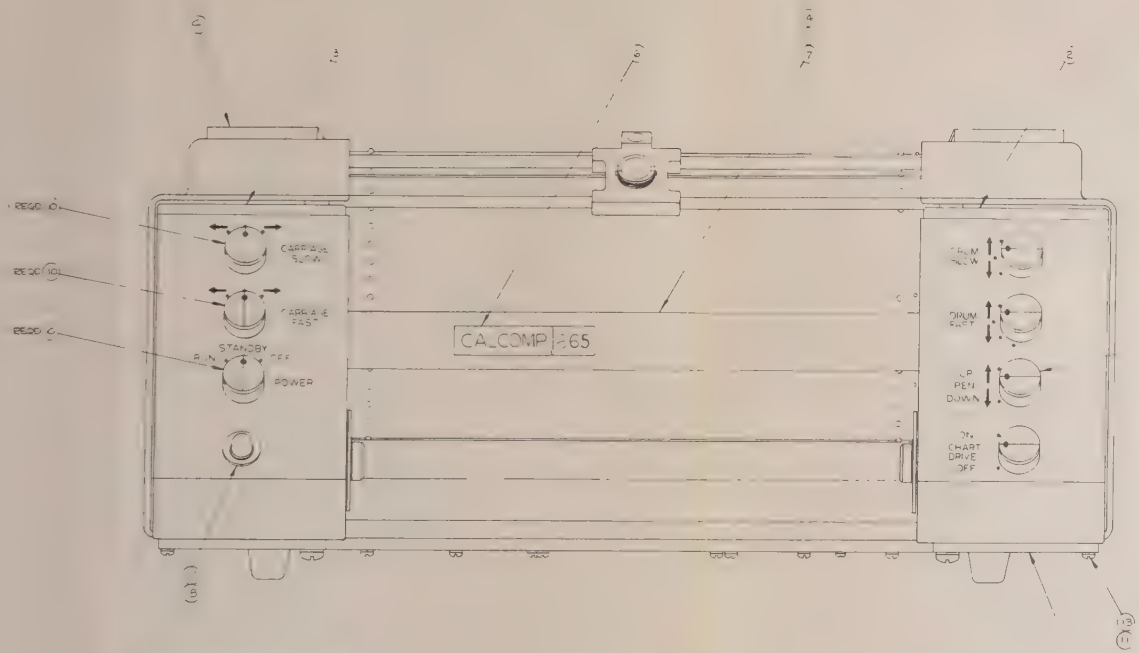
690 ELECTRONICS

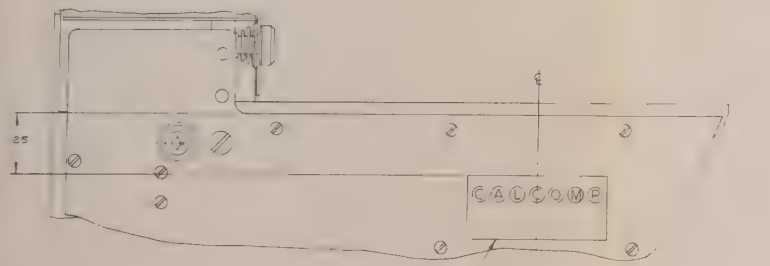
SCALE: 1/2
SIZE: J
10067-101
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET

DWG NO. 10067-101 | SHEET | REV 1

③ TYPEWRITER IMPRESSION STAMP PER CCP SPEC A0109-001, PART NO. 10067-101, MODEL 690, SERIAL NO. ____, VOLTS 115 VAC, AMPS, 7 CYCLES 60, PHASE 1
NOTE UNLESS OTHERWISE SPECIFIED

REVISIONS			
SYM	ZONE	DESCRIPTION	DATE & APPROVAL
		1 MAY BE REWORKED 2 CANNOT BE REWORKED 3 NONE	
		1. ADDED S/N 3 & 4, IN L/M ADDED 10373-203 NAMEPLATE 2 REQD EFFECT ON: ALL PARTS	
		2. IN L/M 10098-310-11, -21, WAS 11151-203-11, -21 EFFECTIVE W/ SERIAL NO AND UP.	E. JOHNSON 3-1-69





BASIC ASSY ONLY (-010) (1)
-011 ASSY ONLY (-005) (15)
-021 ASSY ONLY (-0025) (16)

ITEM NO	ZONE	REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
18		1	10101-703	LAMP		
17	1	1	48002-206-001	LAMP HOLDER		
16	1		10098-310-21	PLOTTER ASSY		
15		1	10098-310-11	PLOTTER ASSY		
14	4	4	MS35234-63	SCREW		
13	6	6	MS35233-30	SCREW		
12	4	4	MS35333-72	LWASHER		
11	6	6	MS35333-71	LWASHER		
10	3	3	3	20-110-5	KNOB	
9	2	4	4	20-110-3	KNOB	
8	1	1	1	11158-203	LOOSE EQUIP KIT	
7	1	1	1	10X 5-203-3	TEAR BAR	
6	1	1	1	2423-273-23	NAMEPLATE	
5	1	1	1	11384-203	PLATE-DEMT	
4	1	1	1	1423 203	CABINET/POWER SUP	
3	1	1	1	0120-203	PANEL L.H.	
2	1	1	1	0121 203	PANEL R.H.	
1	1	1	1	10098-310	PLOTTER ASSY	
ITEM NO	ZONE	REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE

LIST OF MATERIAL OR PARTS LIST

2. REF. SCHEMATIC # 10243-502
(1) 1. TYPEWRITE USING UPPER CASE CHARACTERS:
MODEL: 565; PART NO.: AS REQD; VOLTS: 115;
SERIAL NO.: AS REQD; AMPS: 7; CYCLES: 50/60;
PHASE: 1; STEP SIZE: AS REQD
NOTE: UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: XX ± .03, XXX ± .010
ANGLES ± 0° 30'
DRILLED HOLES
.040 TO 1.285 +.002, -.001
1.38 TO 2.28 +.003, -.001
2.34 TO .500 +.004, -.001
.515 TO .750 +.005, -.001
.765 TO 1.000 +.007, -.001
1.015 TO 2.000 +.010, -.001

DRAWN: [illegible] 3 7 66
CHECK: [illegible] 4/12/66
APPD: [illegible] 4/12/66
APPD: [illegible]
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10 ✓

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

INCREMENTAL MODE
PLOT HEAD 12 INCH

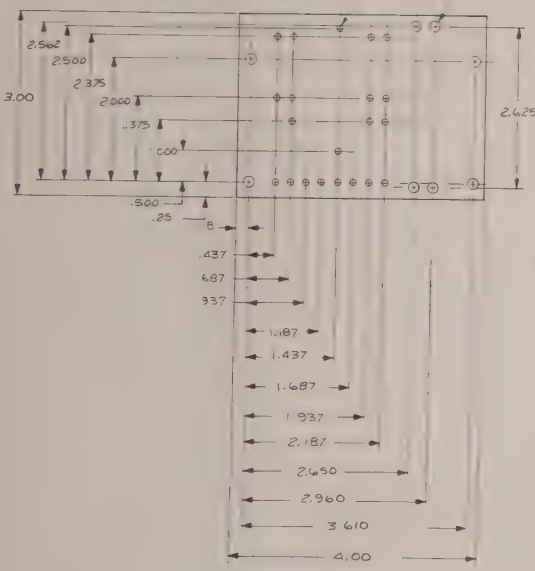
SCALE: 1/1
SIZE: F
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET 1 OF 1

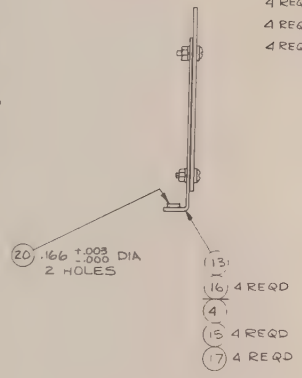
WIRE LIST

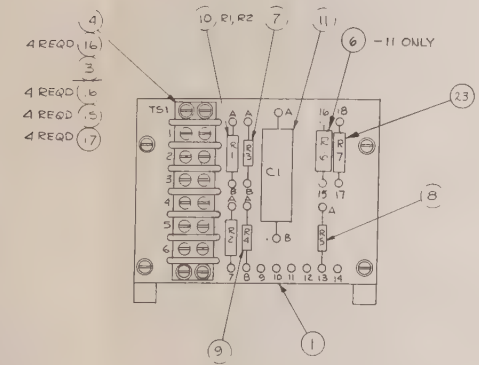
WIRE NO	FROM ITEM NO.	FROM TERM	TO ITEM NO.	TO TERM	REMARKS
1	12	TS1-3	C1	-A	
2	18	TS1-2	TS1	-5	(9)(11)
3	18	TS1-1	R1	-A	
4	18	TS1-6	R2	-A	
5	18	TS1-2	R4	-A	(9)(11)
6	21	R4-A	E9		(10)
7	18	TS1-3	C1	-B	(9)
8	21	C1-B	E12		(10)
9	21	R-B	E10		
10	21	R3-B	E11		
11	21	R3-A	C1	-A	
12	21	R5-A	E 4		(10)

(5) DR #3/32 21 HOLES SWAGE THIS SIDE

— DR #5/32 8 HOLES







REVISIONS SYM	ZONE	DESCRIPTION (1) MAY BE REWORKED (2) CANNOT BE REWORKED (3) NONE	ECO	DATE & APPROVAL
A		1. ADDED TO F/D DIM 166 +.003 -.000 DIA, 2 HOLES 2. ADDED TO L/M, PEMNUT, CL-440-2, 2 REQD 3. ADDED G/N #14. EFFECT ON: NEXT PARTS MADE	1 1 3	107 6-9-65
B		1. ON F/D & L/M; ADDED -11 RQMTS, RL42 RESISTOR, 1 REQD 2. ON F/D; DR 3/32 .19 HOLES WAS 17 HOLES 3. IN L/M; 11288 TERMINAL .19 REQD WAS 17 REQD 4. G/N #11 WAS 'RUBBER STAMP NOS 1-14 APPROX WHERE SHOWN, ETC. EFFECT ON: ITEMS 2,3 & 4 NEXT PARTS ITEM 1 RECORD CHGE	3 1 1 1 1	(EO 1187)
C		1. ADDED ITEM 23, ITEM 5 QTY 21 WAS QTY 19 2. ON F/D DR # 3/32 .21 HOLES WAS DR #3/32 .19 HOLES 3. G/N 11 ··· USING SSM 10244-502-3 REV A···, WAS USING SSM 10244-502-3··	1 1 3	7-4766

ITEM NO	QTY REQD	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION			ZONE
(5)	23	1	1	RL32	RESISTOR	1K ±5% 1W		COML
	22	1	1		TEFLON SLEEVE	24 AWG x 1 FT.		
	21	1	1		BUS WIRE	24 AWG x 1 FT.		MIL-W-3861 TYPE S
(12)	20	2	2	CL-440-2	PEMNUT			COML
(8)	19	4	4	R-188-5	LUG			COML
(7)	18	1	1	2855	WIRE, TEFLON	22 AWG X 1 FT		MIL-W-16878C TYPE E
	17	8	8	MS35649-44	NUT, PLAIN, HEX			
	16	12	12	MS16795-3	WASHER, FLAT			
	15	8	8	MS35337-78	WASHER, SPLIT LOCK			
	14	4	4	MS35233-17	SCREW, PAN HEAD			
	13	4	4	MS35233-14	SCREW, PAN HEAD			
(2)	12	1	1	141-J	JUMPER			COML
(6)	11	1	1	4TM-P10	CAPACITOR	0.1uF ±10% 400V		COML
(5)	10	2	2	RL32	RESISTOR	47Ω ±5% 1W		COML
(5)	9	1	1	RL20	RESISTOR	100K ±5% ½W		COML
(5)	8	1	1	RL20	RESISTOR	4.7K ±5% ½W		COML
(5)	7	1	1	RL20	RESISTOR	1K ±5% ½W		COML
(5)	6	1		RL42	RESISTOR	220Ω ±5% 2W		COML
(4)	5	21	21	11288	TERMINAL			COML
(3)	4	2	2	3	BRACKET			COML
(2)	3	1	1	353-11-06-001	TERMINAL BLOCK			COML
	1	1	1	-3	BOARD	.06 X 3.06 X 4.06	(1)	
ITEM NO	-11	BASIC	10244-502					
	REQD	REQD						

LIST OF MATERIAL OR PARTS LIST

(12) 14. PENN ENG & MFG CORP; DOYLESTOWN, PENN
(11) 13. USE SAME LUG ON TERMINAL STRIP END.
(10) 12. SLEEVE WITH ITEM 22
11. SILK SCREEN USING SSM 10244-502-3 REV A & BLACK INK
(9) 10. USE LUG ON TERMINAL STRIP END
9. REF DESIG SHOWN ON PARTS ARE FOR REF ONLY AND DO NOT APPEAR ON ACTUAL PARTS.
(8) 8. HOLLINGSWORTH CO, PHOENIXVILLE, PA
(7) 7. ALPHA WIRE CO., L.A. CALIF
(6) 6. SPRAGUE ELECTRIC, NORTH ADAMS, MASS
(5) 5. IRC, PHILADELPHIA, PA.
(4) 4. GOE ENGINEERING, L.A, CALIF.
(3) 3. ALAC INC, GLENDALE, CALIF.
(2) 2. CINCH MFG CO., CHICAGO, ILL
(1) 1. EPOXY GLASS LAMINATE.
NOTE: UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: XX ±.03, XXX ±.010
ANGLES ±0° 30'
DRILLED HOLES
.040 TO .1285: +.002, —.001
.136 TO .228: +.003, —.001
.234 TO .500: +.004, —.001
.515 TO .750: +.005, —.001
.765 TO 1.000: +.007, —.001
1.015 TO 2.000: +.010, —.001

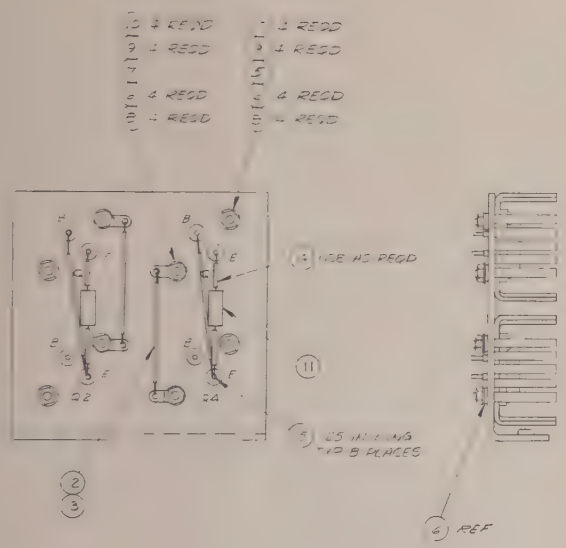
DRAWN C. GAMERO 4-7-65
CHECK
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10 ✓

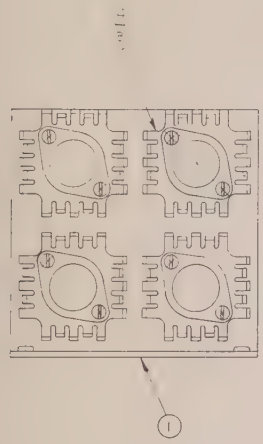
CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

TERMINAL BOARD NO.1 SERIES 700 PLOTTER

SCALE: 1
SIZE: D
10244-502
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET

REVISIONS				
SYM	ZONE	DESCRIPTION	ECO NO.	DATE & APPROVAL
		1 MAY BE REWORKED 2 CANNOT BE REWORKED 3 NONE		
A		1. REVISED ASSY 2. WAS INACTIVE RELEASE EFFECT ON: ALL PARTS		
B		1. ADDED 18GA SLEEVING 2" REQD, 16GA SLEEVING 2.25" REQD & AN960J4 WASHER 4 REQD EFFECT ON: ALL PARTS	1	





ITEM NO	REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
15	1		SLEEVING-TEFLON	16 GA X 2.25 IN	
14			SLEEVING-TEFLON	18 GA. X 2.00 IN	
13	1		SLEEVING-TEFLON	20 GA X 10" LG	
12	1		BUS WIRE	20 AWG X 10" LG	
11	2	R-32	RESISTOR	10Ω ±5% 1W	
10	8	AN 345 C4	NUT		
9	8	AN935C4	L'WASHER, SPLIT		
8	8	MS 35233-18	SCREW		
(5) 7	4	1021-C	LUG		COML
(3) 6	3	N 1-09-25	INSULATOR		COML
5	4	AN960J4	FLAT WASHER		COML
(2) 4	4	2N3232	TRANSISTOR		COML
(1) 3	4	UP-703	HEAT SINK		COML
2	1	10432-203	ANGLE		
1	1	10433-203	HEAT SINK ASSY		

LIST OF MATERIAL OR PARTS LIST

(6) 8. APPLY THERMATE SILICONE GREASE BETWEEN TRANSISTOR AND HEAT SINK ; INTERNATIONAL ELECTRONIC RESEARCH CORP, BURBANK, CALIF.
(5) 7. G.C. ELECTRONICS CO., ROCKFORD ILL.
(4) 6 DELBERT BLINN, PUMONA, CALIF.

(2) 4. SILICON TRANSISTOR CORP; CARLE PLACE, N.Y.
(1) 3. INTERNATIONAL ELECTRONIC RESEARCH CORP, BURBANK, CALIF
2. TORQUE MOUNTING SCREW (ITEM 8) AGAINST TRANSISTOR 8 IN LBS
1. TAG WITH PART NO PER CCP SPEC. A0104-001
NOTE: UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS .XX ± .03 .XXX ± .010
ANGLES ± 0° 30'

DRILLED HOLES

.040	TO .1285	+.002, —.001
.136	TO .228	+.003, —.001
.234	TO .500	+.004, —.001
.515	TO .750	+.005, —.001
.765	TO 1.000	+.007, —.001
1.015	TO 2.000	+.010, —.001

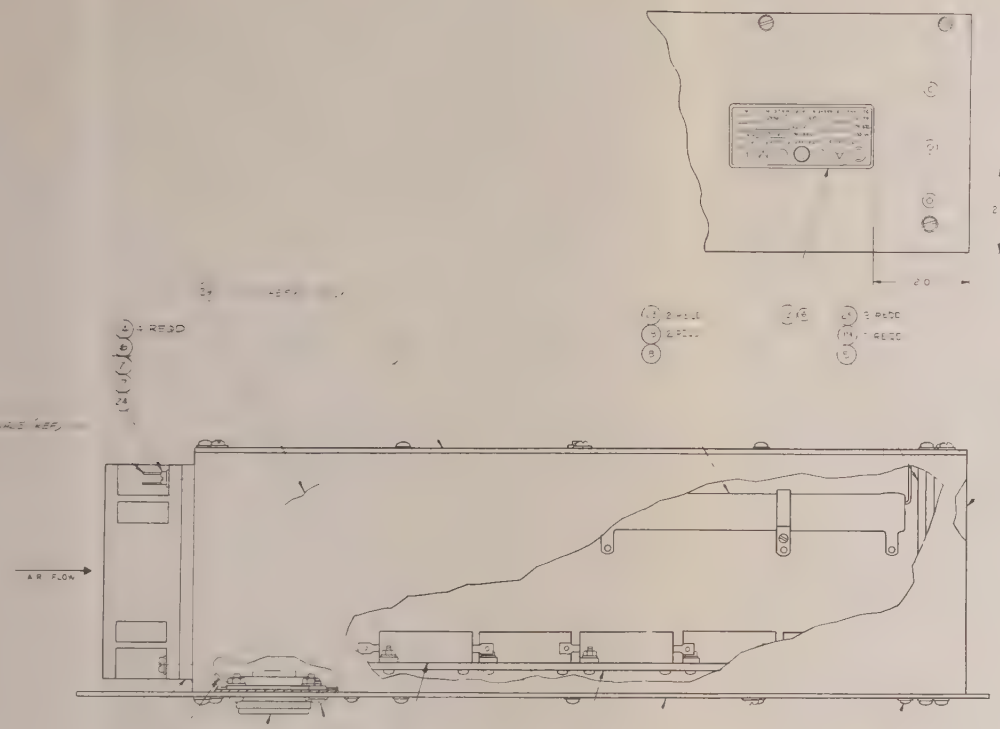
DRAWN	P WESTLY	5-22-69
CHECK		
APPD	R.O.V	
APPD		

FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10 ✓

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

HEAT SINK ASSY

SCALE 1/1
DO NOT SCALE THIS DRAWING
SIZE D
10433-203
WEIGHT
SHEET



REVISIONS			
LTR	ZONE	DESCRIPTION	DATE & APPROVAL
		[1] MAY BE REWORKED [2] CANNOT BE REWORKED [3] NONE	
		1 AFFECT 11992-203 PANEL REQD, 2341 SPACER 4 REQD, 10084-203 NAMPLATE 1 REQD, & MS35233-19 SCREW 4 REQD	2
		2 ADDED G/N 647	3
		3 AN340C4 NUT 20 REQD WAS 14, AN935C4A WASHER 20 REQD WAS 16 EFFECT ON ALL PARTS	1
		1. IN L/M # F/D ADDED 10832-203 11 ASSY	3
		2 ADDED WIRE LISTS TO L/M	3
		3. G/N #6 WAS "TYPE USING UPPER CASE CHARACTERS PART NO: 10832-203, SER. NO: AS REQD"	3
		4 ADDED G/NS 7,8,9,10 & 11 EFFECT ON: NONE	3
		1. IN L/M # FD ADDED 10832-203-21 ASSY	4
		2. IN L/M # FD ADDED 11658-203 PANEL-FILLER, # REQD -11 & -21 ASSYS ONLY, MS35233-28 SCREW 23 REQD -11 & -21 ASSY WAS 18 REQD, AN936A6 WASHER 23 REQD -11 & -21 ASSYS WAS 18 REQD	4
		3. IN L/M; FAN-SENTINEL 1 REQD WAS FAN-MUFFIN 1 REQD	E.O. 1758
		4. IN L/M; 06GOD RESISTOR 6 REQD WAS 09568 RESISTOR 6 REQD	E.O. 2040
		5. IN G/N; REMOVED NOTE #11, WAS "RESISTOR 06GOD MAY BE SUBS. FOR RES. 09568-11 ASSY EFFECT ON: NEXT PARTS MADE	E.O. 2040
		1. IN L/M REMOVED AN935C6 WASHER 4 REQD, MS35333-72 L WASHER WAS AN936A8, MS35333-71 L WASHER WAS AN936A6 & MS35333-70 L WASHER WAS AN936C6A	4
		2. IN F/D REVERSED MTG. HARDWARE FOR FAN EFFECT ON: NEXT PARTS	4
		1. IN L/M ON BASIC ONLY, ITEM 22 MS35233-15, 8 REQD WAS 16, ITEM 20 MS35333-70, 18 REQD WAS 20; ITEM 19 RM-50, 4 REQD WAS 8 & AN340C4 12 REQD WAS 20 EFFECT ON: NEXT PARTS MADE	4

NO	REQD	-11 REQD	-21 REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION		ZONE
29	1			11658-203	PANEL-FILLER			
27		1		WL 10832-203-11	WIRE LIST			
26	1		1	WL 10840-203	WIRE LIST			
25	23	23	18	MS35233-28	SCREW			
24	4	4	4	MS35233-31	"			
23	12	12	12	MS35233-43	"			
22	16	16	8	MS35233-15	SCREW			
21	4	4	4	MS35233-19	SCREW			
20	20	20	12	MS35333-70	L WASHER			
19	26	26	21	MS35333-71	L WASHER			
18	12	12	12	MS35333-72	L WASHER			
17	4	4	4	AN935C6	WASHER			
(5) 16	1		1	1410-6	LUG		COML	
15		1		10840-203-11	T-TH BRKT ASSY			
14	8	8	8	AN340C6	NUT		SMALL PATTERN	
13	20	20	12	AN340C4	NUT			
12	1	1	1	10084-203	NAMEPLATE			
(4) 11	4	4	4	2341	SPACER		COML	
(4) 10		1		NK-27-325L	CONNECTOR		COML	
(3) 9	8	8	8	RM-50	RESISTOR	50, 50W	"	
(2) 8	6	6	6	06GOD	RESISTOR	2Ω, 100W	"	
(1) 7	1	1			FAN-SENTINEL	VENTURI	COML	
6	1	1	1	10992-203	PNL-HEAT SINK			
5	1	1		10805-203	SPACER			
4	1	1	1	10807-203	BRKT-FAN			
3	1	1	1	10809-203	PNL-REAR			
2	1	1	1	10808-203	PNL-RESISTOR			
1	1	1	1	0842-203	TSTR BRKT ASSY			
YEM	-21	-11	BASIC	10832-203	RES PNL ASSY			

LIST OF MATERIAL OR PARTS LIST

10. REF SCHEMATIC NO 10209-502-11 FOR -11 ASSY ONLY
9. REF SCHEMATIC NO. 10209-502 BASIC & -21 ASSYS ONLY
8. WIRE PER WL ICE 30-203-11 ON -11 ASSY ONLY
7. WIRE PER WL 10840-203 ON BASIC & -21 ASSYS ONLY
6. TYPEWRITER IMPRESSION STAMP USING .12 HIGH CHARACTERS PART NO: AS REQD., SERIAL NO: AS REQD.
5. SHERMAN H. SMITH INC. BROOKLYN, N.Y.
4. CANNON ELECTRIC CO. L.A., CALIF.
3. DALE ELECTRONICS INC. COLUMBUS, NEBR.
2. OHMITE MFG. CO. SKOKIE, ILL.
1. ROTRON MFG. CO. WOODSTOCK, N.Y.

NOTE: UNLESS OTHERWISE SPECIFIED

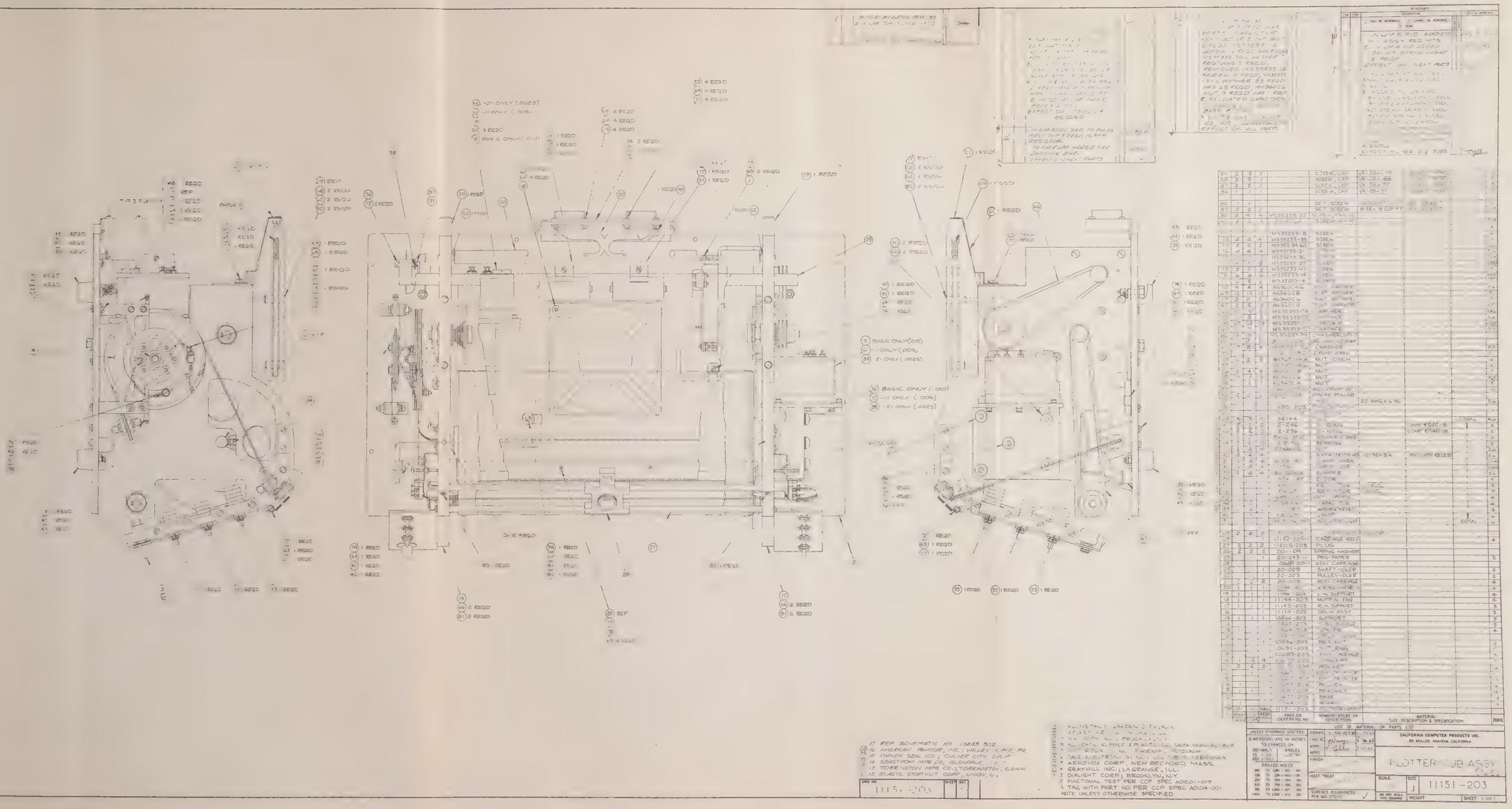
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS | ANGLES
.XX ± .03 | ± 0° 30'
.XXX ± .010
DRILLED HOLES
.040 TO .1285 + .002 — .001
.136 TO .2281 + .003 — .001
.234 TO .3500 + .004 — .001
.515 TO .2781 + .005 — .001
.765 TO 1.0000 + .007 — .001
.5015 TO 2.0000 + .010 — .001

DRAWN O. HAMPTON 19 JAN 1965
CHECK
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10

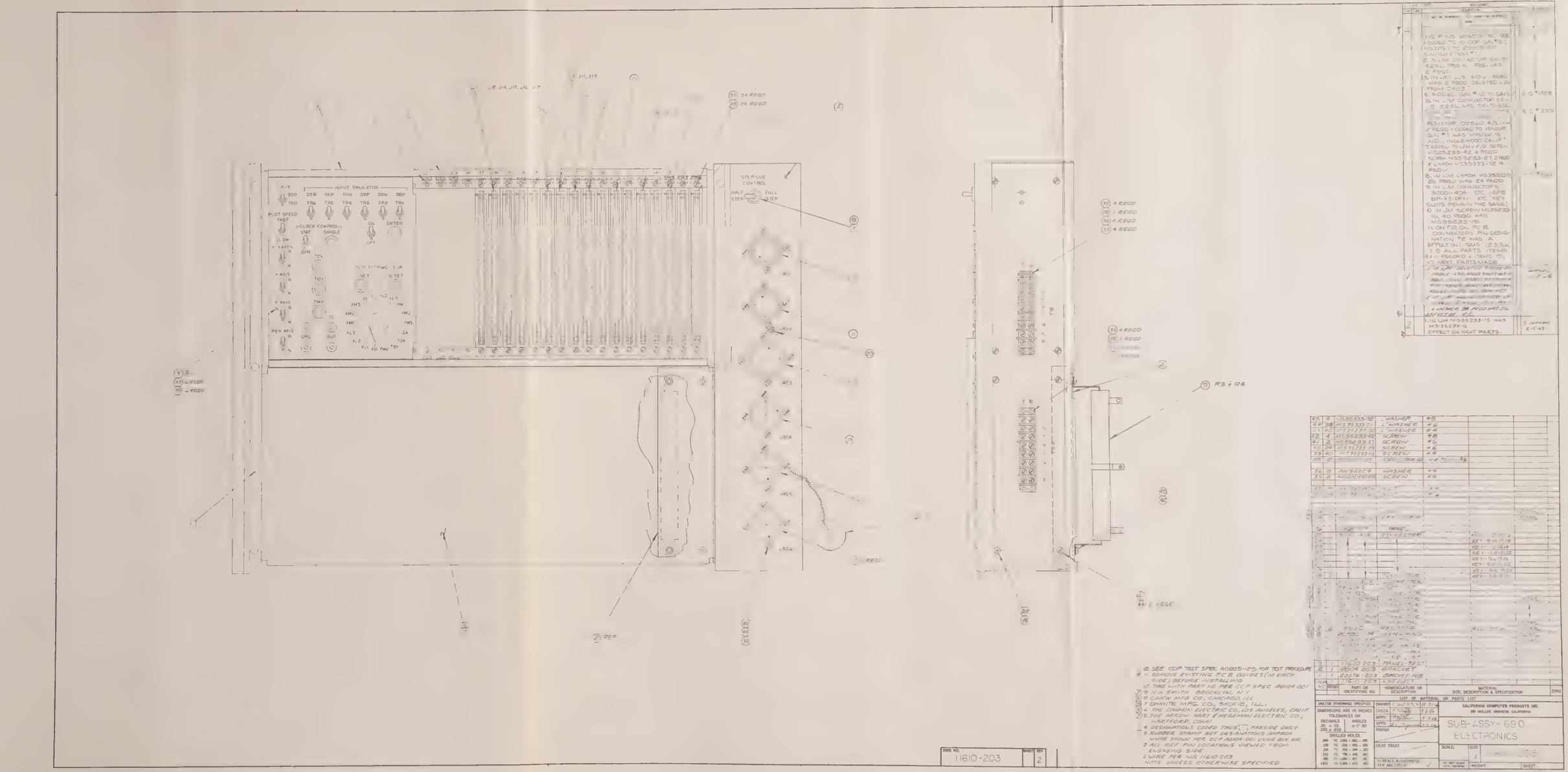
CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

RESISTOR PANEL ASSY

SCALE: FULL
SIZE: F
10832-203
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET



64	2	2	2			SCREW, CAP	MS-35206-78		
56	3	3	3			SCREW, CAP	MS-201-88		
87	2	2	2			SCREW, CAP	MS 206-79		
86	1	1	1			SCREW, CAP	MS-206-77		
84	1	1	1			SET SCREW			
83	2	2	2			SET SCREW	8-32 x 9/32 PT		
80	4	4	4			SCREW, PAN HD SLOTTED HEAD			
					MS35233-8	SCREW			
78	4	4	4		MS35233-33	SCREW			
79	2	2	2		MS3923440	SCREW			
76	4	4	4		MS35233-31	SCREW			
					MS35233-34	SCREW			
		2			MS35233-27	SCREW			
73	2	2	2		MS35233-17	SCREW			
72	14	14	14		MS35233-14	SCREW			
		2			MS35233-4	SCREW			
70	4	4	4		AN960C416	FLAT WASHER			
69	12	12	12		AN960C8	FLAT WASHER			
68	2	2	2		AN960C4	FLAT WASHER			
67	2	2	2		AN960C8	WASHER			
					MS35333-74	WASHER			
					MS35333-73	WASHER			
					MS35333-71	WASHER			
					MS35333-70	WASHER			
					MS35337-74	WASHER, LOCK			
		2				SPRING SYSTEM (WASHER)			
		4				PLUG ASSY			
		4				NUT, CINCH			
		4				NUT			
		4				NUT			
		4				NUT			
		4				ALIGNMENT PACER POWER			
						22 AWG E.G. IN.			
					36144				
					2-236				
					2-234				



ITEM	QTY	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
1	1	11610-203	ASSEMBLY		
2	1	11609-203	PANEL-TOP		
3	1	11604-203	BRACKET		
4	1	20076-203	BRACKET-PCB		

LIST OF MATERIAL OR PARTS LIST

ITEM	QTY	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION
65	4	MS35333-72	LWASHER	#8
66	38	MS35333-71	LWASHER	#6
67	90	MS35333-70	LWASHER	#4
72	4	MS35233-48	SCREW	#8
41	2	MS35233-27	SCREW	#6
40	24	MS35233-25	SCREW	#6
39	45	MS35233-5	SCREW	#4
68	8	[illegible]	SCREW	#4
36	8	NU4604-8	WASHER	#8
35	8	AN507R8R8	SCREW	#8

KEY 5-10-1718
KEY 5-10-1816
KEY 7-18-2128
KEY 5-44-310
KEY 5-10-1218
KEY 5-44-320
KEY 7-8-310

1. SEE CCP TEST SPEC. A0805-125 FOR TEST PROCEDURE
2. REMOVE EXISTING P.C.B. GUIDES (10 EACH SIDE) BEFORE INSTALLING
3. TAG WITH PART NO. PER CCP SPEC A0104-001
4. H.H. SMITH, BROOKLYN, N.Y.
5. CINCH MFG CO., CHICAGO, ILL.
6. THE CANNON ELECTRIC CO., LOS ANGELES, CALIF.
7. OMNITE MFG. CO., SKOKIE, ILL.
8. THE ARROW-HART & HEGEMAN ELECTRIC CO., HARTFORD, CONN.
9. DESIGNATIONS COINCIDENT TWIST [ ] PARTSIDE ONLY
10. RUBBER STAMP REF DESIGNATIONS APPROX WHERE SHOWN PER CCP A0104-001 USING BLK INK
11. ALL REF. PIN LOCATIONS VIEWED FROM ENGAGING SIDE
12. WIRE PER WL 11610-203
NOTE UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED	DRAWN	
DIMENSIONS ARE IN INCHES	CHECK	
TOLERANCES ON	APPD	
DECIMALS XX ± .03, XXX ± .010	ANGLES ± 0° 30'	APPD
DRILLED HOLES		FINISH
.093 TO .128	± .005 — .009	
.136 TO .228	± .005 — .010	HEAT TREAT
.234 TO .500	± .004 — .009	
.516 TO .750	± .005 — .010	
.766 TO 1.000	± .007 — .010	SURFACE ROUGHNESS PER MIL-STD-10
1.033 TO 1.250	± .010 — .012	

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

SUB-ASSY-690
ELECTRONICS

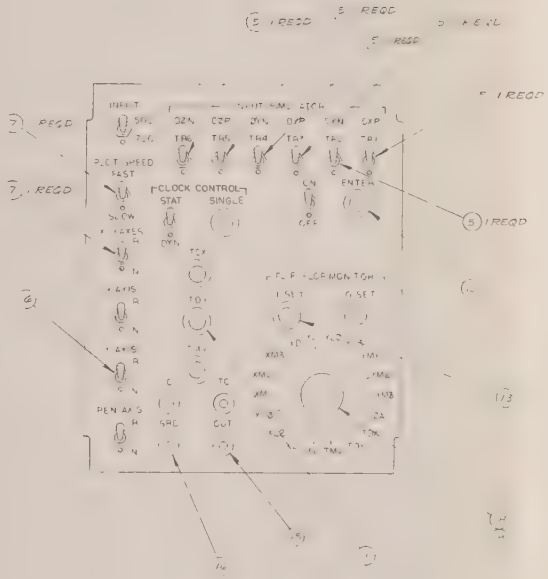
SCALE: SIZE: J
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET

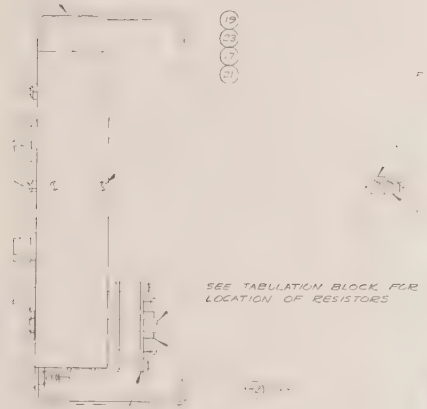
DWG NO. 11610-203 SHEET REV Z

1 FS P.N.G 20570 CH. 102 CODED TO A.I.D.P. GN #15 MOUNTED POSITIVE SWITCH (ITEM #1)
2 N.L.M. CONNECTOR SK-S-225L MAC P.N.G. MS-3452 2 REQ'D.
3 N.M.I. U.S. 4104 REQ'D WAS 2 REQ'D DELETED N/A FROM 7403
4 ADDED GEN # 1210 GRIS
5 N.L.M. CONNECTOR SK-S-225L MAC SK-S-3452
6 RESISTOR 0.55 GD 4.7 L.I.M. 2 REQ'D ADDED TO VENDOR GEN # 1 WAS MASTER TEL INC., INGLEWOOD CALIF.
7 ADDED TO UNIFIED SCREW MS35238-42 4 REQ'D SCREW MS35283-27, 2 REQ'D & WASH MS35333-72 4 REQ'D
8 N.U.M. WASH MS35333-71 26 REQ'D WAS 24 REQ'D
9 N.L.M. CONNECTORS 3000-409- ETC. (SPE BP-43-DRXI- ETC. KEY SLOTS REMAIN THE SAME)
10 N.U.M. SCREW MS35233-16, 40 REQ'D AS MS35233-15
11 ON P.C.B. CONNECTORS P.N. DESIGNATION 'E' WAS A
EFFECT ON: ITEMS 1, 2, 3, 4, 5, 6, 7, 8 ALL PARTS ITEMS 9, 10, 11 REQ'D & ITEMS 12, 13 NEXT PARTS MADE
1 N.L.M. SPACER 91059-20 (SINGLE - 4 PO.) ADDED PART NO. 11
LUMBER 28 REQ'D PART 26
EFFECTIVE S/C
1. N.U.M. MS35233-15 WAS MS35237-6
EFFECT ON NEXT PARTS.

5 JANUARY 6-5-63

LTR	ZONE	REVISIONS DESCRIPTION	DATE & APPROVAL
		1. MAY BE REWORKED 2. CANNOT BE REWORKED 3. HOME	
A		WIRES: ADD .5" EXTRA ON 1/2 TO HIGHER WITH DETAIL	
B		EFFECT ON: NONE ADDED TO LIM THE FOLLOWING 0.2% RESISTOR 6.5K ±5% 1/2W, 1 REQD. 56K ±5% 1/2W, 2 REQD. 680Ω ±5% 1/2W, 1 REQD. 100Ω ±5% 1/2W, 1 REQD. ALSO ADDED VENDOR TO G/NS, G/N 9. 2. ADDED TO L/M, SLEEVING 16 AWG x 6.00", CLEAR 3. T/N 17D. ADDED TABULATION BLOCK & NOTE SEE TABULATION BLOCK FOR LOCATION OF RESISTORS	
		EFFECT ON: ALL PARTS	





S21 (9) DECK 'D' (REF)

TABULATION BLOCK		
RESISTOR CONNECTION		
TERM (FROM)	RESISTOR	TERM (TO)
S21-D1	ITEM 27	S21-D4
S21-D5	ITEM 28	S21-D7
S21-D9	ITEM 28	S21-D11
S21-D13	ITEM 29	S21-D15
S21-D16	ITEM 30	S21-D18

NO REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE DESCRIPTION & SPECIFICATION	ZONE
			16 AWG x 6.00" CLEAR	
1		RESISTOR	100Ω ±5% 1/2W	COML
1		RESISTOR	680Ω ±5% 1/2W	COML
1		RESISTOR	56K ±5% 1/2W	COML
1		RESISTOR	6.8K ±5% 1/2W	COML
33 2	MS35337-77	L WASHER	#2	
21 2	MS35233-9	SCREW	2-56 x 3/4	
19 2	AN340C2	NUT	2-56	
1	90-0-26	KNOB		COML
2	755 R100K	POTENTIOMETER		COML
14 1	108-903	TEST POINT	BLACK	COML
3	109-901	TEST POINT	WHITE	COML
13 1	RBL21(9-327)	SWITCH		COML
12 1	MBS-C-ATO	SWITCH		COML
5	MBS-A-ATO	SWITCH		COML
9 1	245143-LK4	SWITCH		COML
2	MST-405N	SWITCH		
6	MST-205N	SWITCH		
6	MST-105D	SWITCH		
1	11601-203	PANEL		
T/N	2220 2-3	690 TEST PANEL		

LIST OF MATERIAL OR PARTS LIST

(7) 9. INTERNATIONAL RESISTANCE CORP, BOONE, N.C.
8. WIRE PER W/L 11610 203
(6) 7. RAYTHEON CO., WESTWOOD, MASS.
6. HELIPOT DIV., BECKMAN INSTRUMENTS, INC, FULLERTON, CALIF.
5 E. F. JOHNSON CO., WASECA, MINN.
(3) (4) (5) 4. TRANSISTOR ELECTRONICS CORP, MINNEAPOLIS, MINN
3. CAK MFG CO., CHICAGO, ILL.
(2) 2. ALCO ELECTRONICS PRODUCTS INC., LAWRENCE, MASS.
1. TAG WITH PART NO PER CCP SPEC A0109-001
NOTE UNLESS OTHERWISE SPECIFIED

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS ANGLES
.XX ± .010
DRILLED HOLES
.160 TO .1285 + .002, — .001
.196 TO .228 + .003, — .001
.316 TO .500 + .004, — .001
.625 TO .750 + .005, — .001
.965 TO 1.000 + .007, — .001
1.015 TO 2.000 + .010, — .001

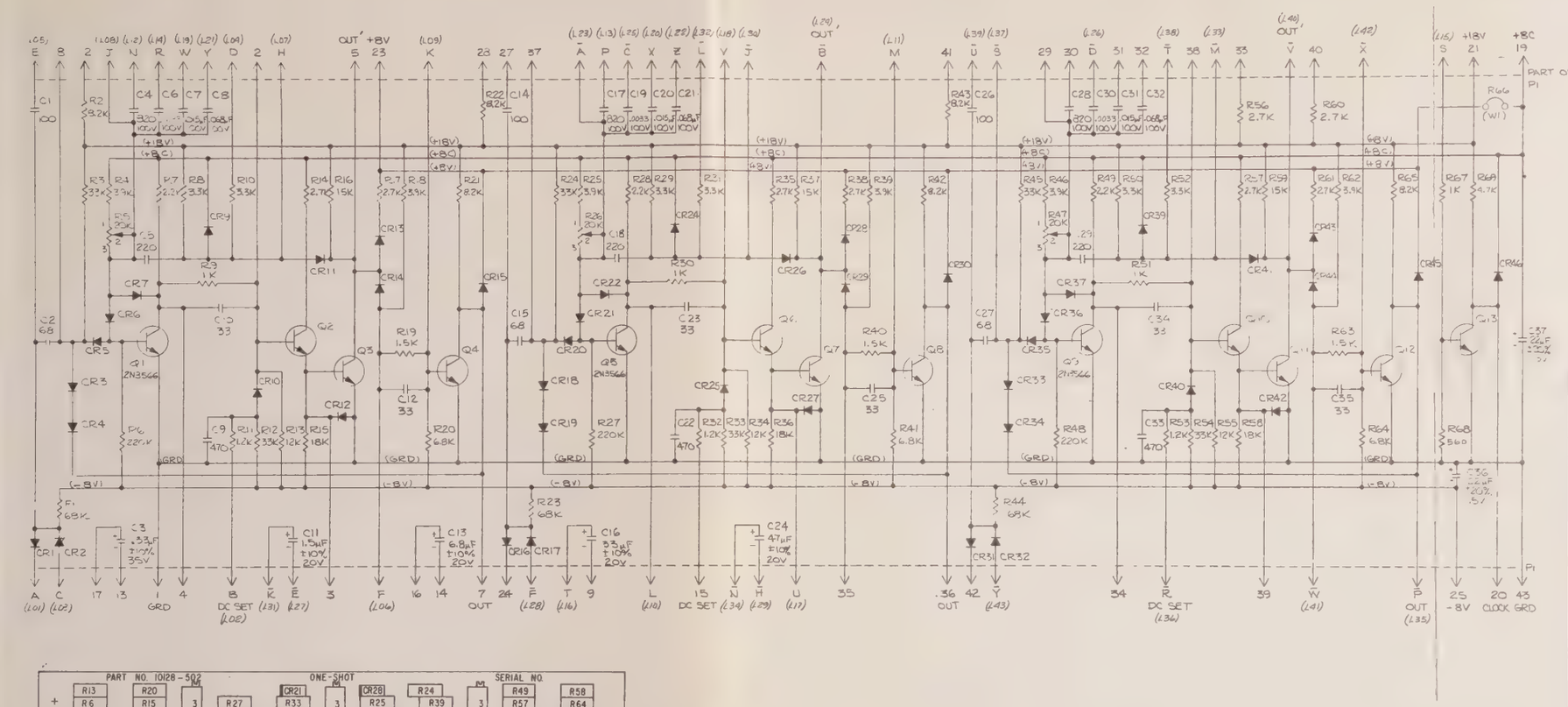
DRAWN
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD 10

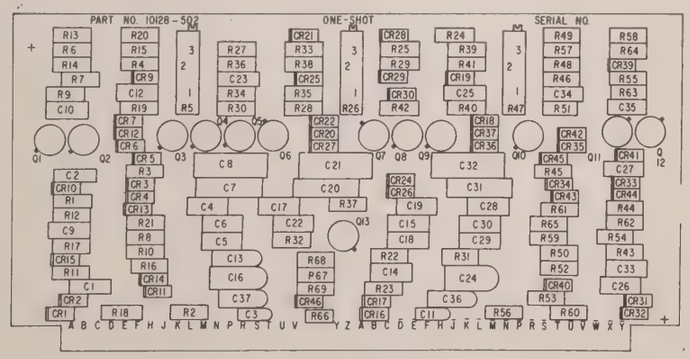
CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

SCALE
SIZE E
1620-203
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET

SECTION 6
SCHEMATIC DIAGRAMS

Drawing Title	Drawing Number
Assembly – One Shot	10128-502-000
Logic/Flip Flop 300Kc	10156-502-11
Flip-Flop 300Kc	10160-502-11
Logic Driver/Inverter 300Kc	10164-502-11
Clock Generator	10172-502-11
Assembly – Regulator	10176-502-11
Plotter Driver	10180-502
Schematic – 10007-402 Power Supply	10204-502
Schematic – Resistor Panel (10832-203)	10209-502
Schematic – Series 700 Plot Head	10243-502
Plotter Input Network	10440-502
Assembly NAND-NOR Gate 1Mc	10638-502-000
Assembly – Plotter Network No. 2	10847-502-011





REVISIONS			
SYM	ZONE	DESCRIPTION	DATE & APPROVAL
		[1] MAY BE REWORKED [2] CANNOT BE REWORKED [3] NONE	
1		1. F/D 1001-206 JUMPER LEAD L-2007-1 WAS 2-T0-#26 W/BSG TAP 2. L/M TXTOR - 003646 WAS TXTOR - 050013 3. F/D L/M R7 28,45 2.2K OHM WAS 3.3K OHM 4. RESMF-000326 6 REQ'D WAS 5 REQ'D EFFECT ON: NEXT PARTS MADE	4 JUNE 68
2		1. F/D Q1,5,9 10404-507-000 (2N3566) WAS 2N3646 2. L/M ITEM 39 ADDED EFFECT ON: ALL PARTS	16 OCT 68 10-17-69

ITEM NO	REQD	PART NO	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
1	1	11001 - 206	JUMPER LEAD L-2007-1	00001	(W1) R66
2	1	RESMF - 000238	560 OHM P/M 5% 1/2W RL20 5615	24000	R68
3	4	RESMF - 000302	1 K OHM P/M 5% 1/2W RL20 1025	24000	R9,30,51,67
4	3	RESMF - 000306	1.2K OHM P/M 5% 1/2W RL20 1225	24000	R11,32,53
5	3	RESMF - 000310	1.5K OHM P/M 5% 1/2W RL20 1525	24000	R19,40,63
6	8	RESMF - 000322	2.2K OHM P/M 5% 1/2W RL20 2225	24000	R14,17,35,38,[illegible]
7	6	RESMF - 000324	3.3K OHM P/M 5% 1/2W RL20 3325	24000	R4,10,29,31,[illegible]
8	6	RESMF - 000330	3.9K OHM P/M 5% 1/2W RL20 3925	24000	R4,18,25,39,46,62
9	1	RESMF - 000334	4.7K OHM P/M 5% 1/2W RL20 4725	24000	R69
10	3	RESMF - 000342	6.8K OHM P/M 5% 1/2W RL20 6825	24000	R20,41,64
11	6	RESMF - 000346	8.2K OHM P/M 5% 1/2W RL20 8225	24000	R2,21,22,42,43,[illegible]
12	3	RESMF - 000406	12 K OHM P/M 5% 1/2W RL20 1235	24000	R13,34,55
13	3	RESMF - 000410	15 K OHM P/M 5% 1/2W RL20 1535	24000	R16,37,59
14	3	RESMF - 000414	18 K OHM P/M 5% 1/2W RL20 1835	24000	R15,36,58
15	3	RESVAR - 000080	POT 20KOHM 1/2W 77PR20K	05675	R5,26,47
16	6	RESMF - 000426	33 K OHM P/M 5% 1/2W RL20 3335	24000	R3,12,24,33,45,54
17	3	RESMF - 000442	68 K OHM P/M 5% 1/2W RL20 6835	24000	R1,23,44
18	3	RESMF - 000518	220 K OHM P/M 5% 1/2W RL20 2245	24000	R6,27,48
19	3	CAPAC - 040030	.0033MF P/M 10% 100V 64P10AA332	21001	C6,19,30
20	3	CAPAC - 040070	.015 MF P/M 10% 100V 64P15AA153	21001	C7,20,31
21	3	CAPAC - 040110	.068 MF P/M 10% 100V 64P22AA683	21001	C8,21,32
22	1	CAPAC - 060215	.33 MF P/M 10% 35V XR33C35K	24750	C3
23	1	CAPAC - 060165	1.5 MF P/M 10% 20V K1R5C20K	24750	C11
24	1	CAPAC - 060230	6.8 MF P/M 10% 35V K6R8C35K	24750	C13
25	2	CAPAC - 060140	22 MF P/M 10% 15V K22C15K	24750	C36,37
26	1	CAPAC - 060195	33 MF P/M 10% 20V K33C20K	24750	C16
27	1	CAPAC - 060200	47 MF P/M 10% K47C20K	24750	C24
	1	10128 502-0000	ONE-SHOT		

ITEM NO	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
28	6	CAPAC - 030055	33 PF P/M 5% 500V CM15E330J	35250	C10,12,23,25,34,35
29	3	CAPAC - 030075	68 PF P/M 5% 500V CM15E680J	35250	C2,15,27
30	3	CAPAC - 030085	100 PF P/M 5% 500V CM15E101J	35250	C1,14,26
31	3	CAPAC - 030100	150 PF P/M 5% 500V CM15E151J	35250	C5,18,29
32	3	CAPAC - 030130	470 PF P/M 5% 500V CM15E471J	35250	C9,22,33
33	3	CAPAC - 030145	820 PF P/M 5% 500V CM15E821J	35250	C4,17,28
34	43	DIODE - 050002	DIODE 1N914	19000	CR1 THRU 7 9 THRU 22,24 THRU 37,39 THRU 46
35	10	TXTOR - 003646	TRANSISTOR 2N3646	19000	Q2,3,4,6,8,10,11,12,13,7
36	13	TXTMNT - 000001	TRANSISTOR MOUNT CSL88002	11250	
37	1	PCB - 010129	CIRCUIT BOARD 10129-502	00002	
38	3	RESMF - 000318	2.2K OHM P/M 5% 1/2W RL20 2225	24000	R7,28,49
39	3	10404-507-000	TRANSISTOR	19000	Q1,5,9

00001	CALIFORNIA COMPUTER PRODUCTS, INC.	ANAHEIM, CALIFORNIA
00002	COMMERCIAL - VENDOR NOT SPECIFIED	
05675	BECKMAN INSTRUMENTS	FULLERTON, CALIFORNIA
11250	CIRCUIT STRUCTURES LAB	COSTA MESA, CALIFORNIA
19000	FAIRCHILD SEMICONDUCTOR	MOUNTAIN VIEW, CALIFORNIA
21001	GENERAL ELECTRIC CAPACITOR	IRMO, SOUTH CAROLINA
24000	INTERNATIONAL RESISTANCE COMPANY	PHILADELPHIA, PENNSYLVANIA
24750	KEMET DEPT. UNION CARBIDE CORPORATION	CLEVELAND, OHIO
35250	SANGAMO ELECTRIC	PICKENS, SOUTH CAROLINA

LIST OF MATERIAL OR PARTS LIST

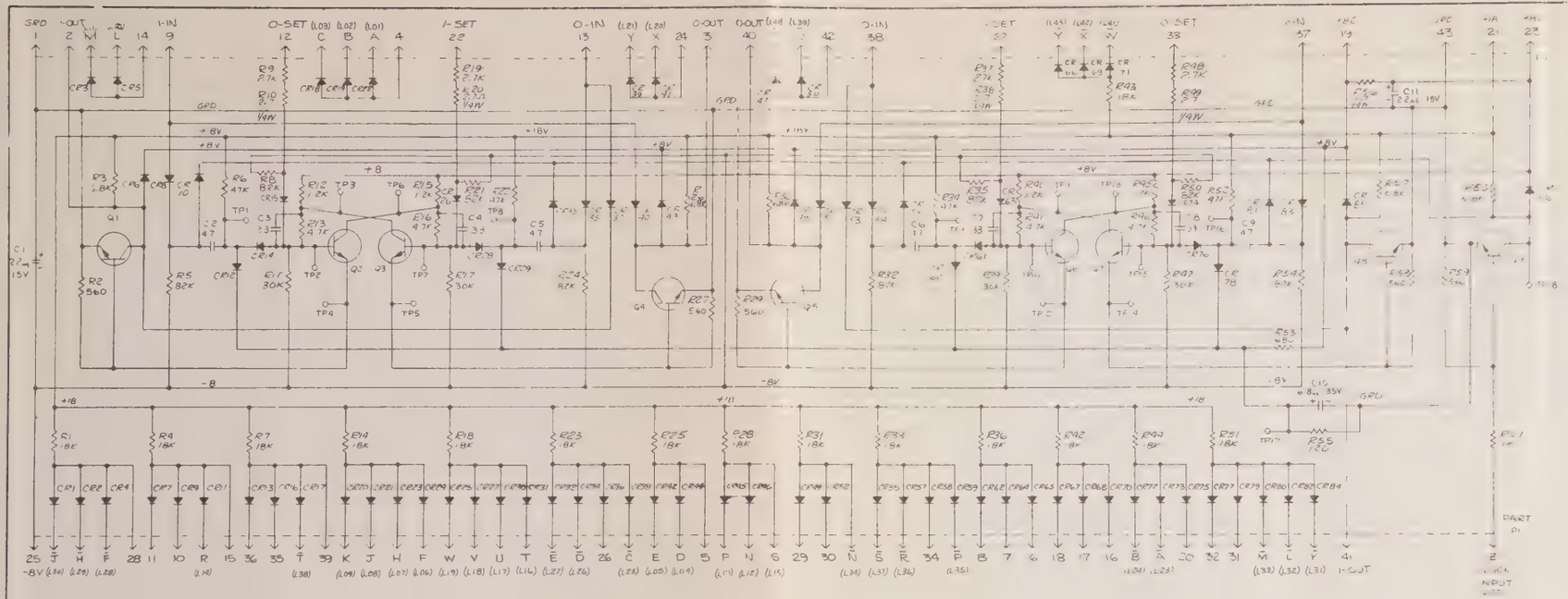
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON DECIMALS .XX ± .03 .XXX ± .010 ANGLES ± 0° 30'
DRILLED HOLES .040 TO .128 +.002, —.001 .136 TO .228 +.003, —.001 .234 TO .500 +.004, —.001 .515 TO .750 +.005, —.001 .765 TO 1.000 +.007, —.001 1.015 TO 2.000 +.010, —.001

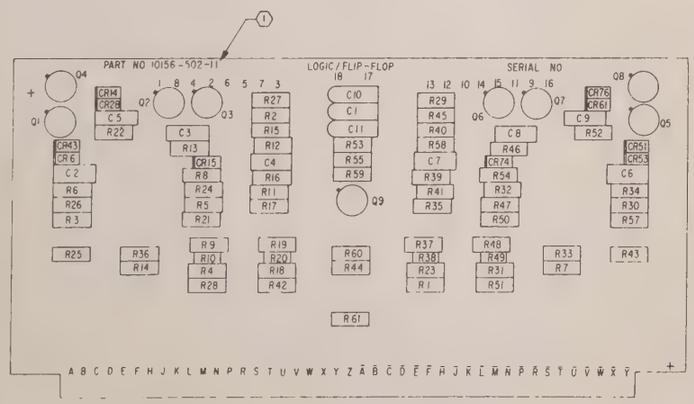
DRAWN R. MAPANTI 10-4-68
CHECK [illegible] 10-4-68
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

ASSEMBLY - ONE SHOT

SCALE. SIZE R 10128-502-0000
DO NOT SCALE THIS DRAWING
WEIGHT SHEET





REVISIONS				
BTM	ZONE	DESCRIPTION		DATE & APPROVAL
		1 MAY BE REMOVED	2 CANNOT BE REMOVED	
		3 NONE		
A		1. REVISED FORMAT EFFECT ON: RECORD		4-29-66

ITEM NO	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
1	17	RESMF -000414	18 KOHM P/M 5% 1/2W RL20 1835	24000	R1,4,7,14,18,23,25,28,31 R33,36,42,43,44,51
2	4	RESMF -000[illegible]	560 OHM P/M 5% 1/2W RL20 5615	24000	R2,27,29,58,59
3	5	RESMF -000342	6.8KOHM P/M 5% 1/2W RL20 6825	24000	R3,26,30,57,60
4	6	RESMF -000441	82 KOHM P/M 5% 1/2W RL20 8235	24000	R5,8,21,24,32,35,50,54
5	4	RESMF -000423	47 KOHM P/M 5% 1/2W RL20 4735	24000	R6,22,34,52
6	4	RESMF -000[illegible]22	2.7KOHM P/M 5% 1/2W RL20 2725	24000	R9,19,37,48
7	4	RESMF -000474	30 KOHM P/M 5% 1/2W RL20 3035	24000	R11,17,39,47
8	4	RESMF -000306	1.2KOHM P/M 5% 1/2W RL20 1225	24000	R12,15,40,45
9	4	RESMF -000434	4.7KOHM P/M 5% 1/2W RL20 4725	24000	R13,16,41,46
10	1	RESMF -000[illegible]41	680 OHM P/M 5% 1/2W RL20 6815	24000	R53
11	1	RESMF -000[illegible]20	120 OHM P/M 5% 1/2W RL20 1215	24000	R55
12	1	RESMF -000302	1 KOHM P/M 5% 1/2W RL20 1025	24000	R61
13	5	RESCC -000[illegible]2	2.7 OHM P/M 5% 1/4W CB27G5	02500	R10,20,38,49,56
14	2	CAPAC -000[illegible]3	22 MF P/M 10% 15V X22C15K	24750	C1,11
15	1	CAPAC -000[illegible]4	0.6 MF P/M 10% 25V [illegible]35K	24750	C10
16	3	CAPAC -030065	47 PF P/M 5% 500V CM15E470J	35250	C2,5,6,9
17	3	CAPAC -030055	33 PF P/M 5% 500V CM15E330J	35250	C3,4,7,8
18	9	TXTOR -050001	TRANSISTOR 2N2369	19000	Q1,2,3,4,5,6,7,8,9
19	9	TXTMNT-000101	TRANSISTOR MOUNT CSL88002	11250	
20	18	TSTPT -000901	TEST POINT TERMINAL 910443-203	26750	TP1 THRU TP18
21	1	PCB -010157	CIRCUIT BOARD 10157-03	00002	
22	86	DIODE -050002	DIODE 1N914	19000	CR1 THRU 86

1	10156-502		
REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION

ZONE

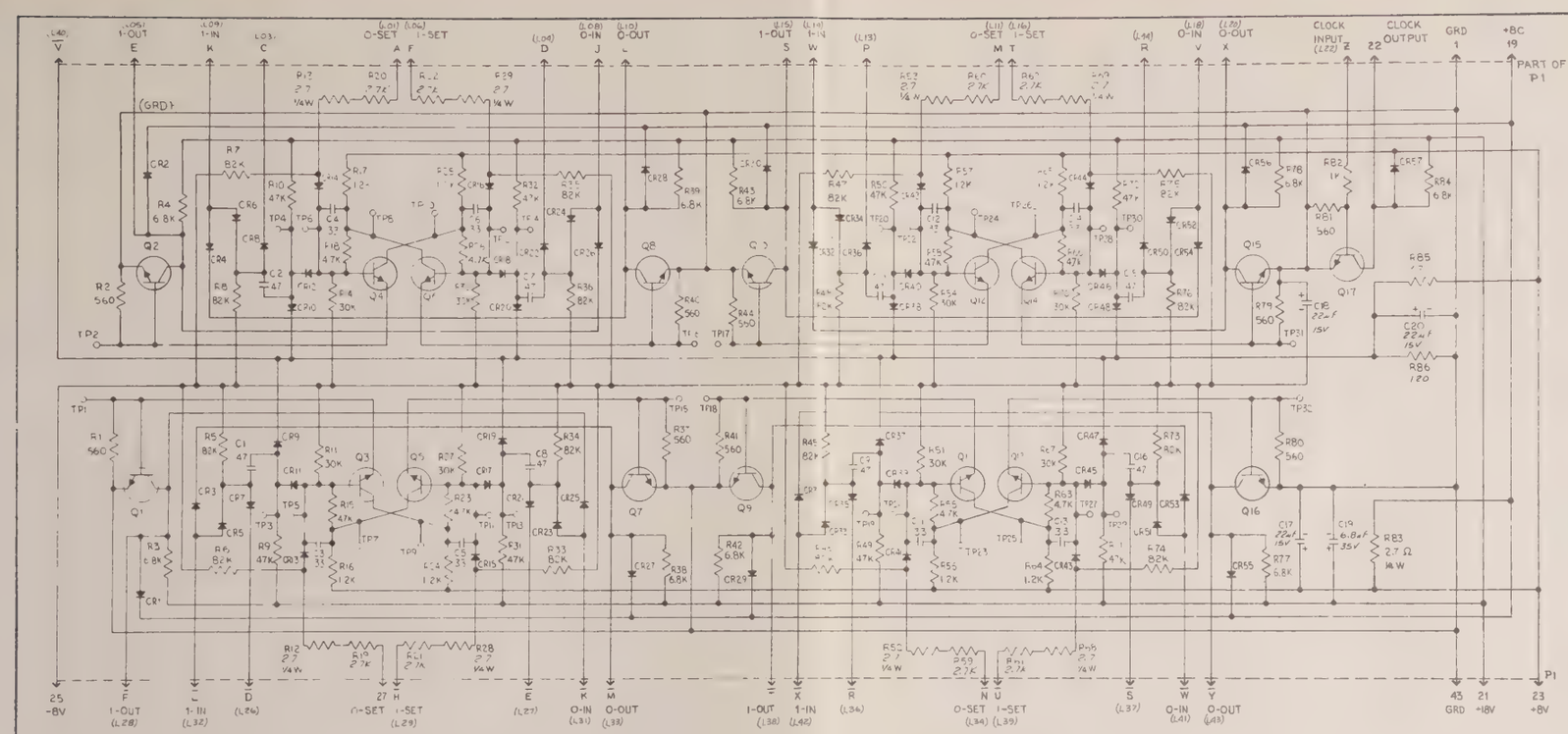
LIST OF MATERIAL OR PARTS LIST

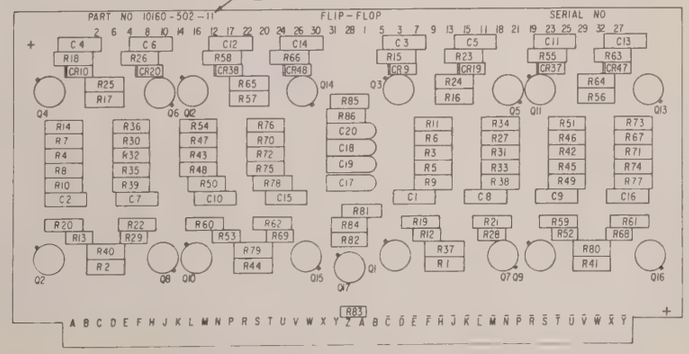
UNLESS OTHERWISE SPECIFIED	DRAWN	C. RAMERO 7-20-66
DIMENSIONS ARE IN INCHES	CHECK	7-31-66
TOLERANCES ON DECIMALS: .XX ± .03, .XXX ± .010; ANGLES ± 0° 30'	APPD	8-22-66
	APPD	9-21-66
	FINISH	
DRILLED HOLES: .040 TO .1285 + .002, — .001; .136 TO .228 + .003, — .001; .234 TO .500 + .004, — .001; .515 TO .750 + .005, — .001; .765 TO 1.000 + .007, — .001; 1.015 TO 2.000 + .010, — .001	HEAT TREAT	
	SURFACE ROUGHNESS PER MIL-STD-10 ✓	DO NOT SCALE THIS DRAWING

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

LOGIC/FLIP FLOP 300KC

SCALE: NONE	SIZE: R	10156-502-11
WEIGHT	SHEET	





REVISIONS				
SYM	ZONE	DESCRIPTION		DATE & APPROVAL
		A MAY BE REWORKED B CANNOT BE REWORKED C NONE		
A		1. REVISED FORMAT EFFECT ON: RECORD		4-30-74

ITEM NO.	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
1	1	PCB -010161	CIRCUIT BOARD 10161	00002	
2	9	RESMF -030238	560 OHM P/M 5% 1/2W RL20 5615	24000	R1,2,37,40,41,44,79,80,81
3	1	RESMF -030226	330 OHM P/M 5% 1/2W RL20 3315	24000	R85
4	9	RESMF -030342	6.8KOHM P/M 5% 1/2W RL20 6825	24000	R3,4,38,39,42,43,77,78,84
5	1	RESMF -030206	120 OHM P/M 5% 1/2W RL20 1215	24000	R86
6	16	RESMF -030446	82 KOHM P/M 5% 1/2W RL20 8235	24000	R5,6,7,8,33,34,35,36, R45 THRU 48, 73 THRU 76
7	1	RESMF -050302	1 KOHM P/M 5% 1/2W RL20 1025	24000	RB2
8	8	RESMF -030434	47 KOHM P/M 5% 1/2W RL20 4735	24000	R9,10,31,32,49,50,71,72
9	8	RESMF -000424	30 KOHM P/M 5% 1/2W RL20 3035	24000	R11,14,27,30,51,54,67,70
10	8	RESMF -000334	4.7KOHM P/M 5% 1/2W RL20 4725	24000	R15,18,23,26,55,58,63,66
11	8	RESMF -000306	1.2KOHM P/M 5% 1/2W RL20 1225	24000	R16,17,24,25,56,57,64,65
12	8	RESMF -000322	2.7KOHM P/M 5% 1/2W RL20 2725	24000	R19,20,21,22,59,60,61,62
13	9	RESCC -000022	2.7 OHM P/M 5% 1/4W CB2705	02500	R12,13,28,29,52,53,68,69, R83
14	8	CAPAC -030065	47 PF P/M 5% 500V CM15E470J	35250	C1,2,7,8,9,10,15,16
15	8	CAPAC -030055	33 PF P/M 5% 500V CM15E330J	35250	C3,4,5,6,11,12,13,14
16	1	CAPAC -050230	6.8 MF P/M 10% 35V K68C35K	24750	C19
17	3	CAPAC -060140	22 MF P/M 10% 15V K22C15K	24750	C17,18,20
18	17	TXTOR -040001	TRANSISTOR 2N2369	19000	Q1 THRU 17
19	17	TXTMNT-030001	TRANSISTOR MOUNT CSL88002	11250	
20	57	DIODE -050002	DIODE 1N914	19000	CR1 THRU CR57
21	32	TSTPT -030001	TEST POINT TERMINAL 910443-203	26750	TP1 THRU TP32

ITEM NO.	REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
1	1	10160-502-11	FLIP-FLOP		

LIST OF MATERIAL OR PARTS LIST

(1) APPLY DASH NO. TO ASSY. AS REQ'D.

00002	COMMERCIAL - VENDOR NOT SPECIFIED	
02500	ALLEN BRADLEY	MILWAUKEE, WISC.
19700	FAIRCHILD SEMICONDUCTOR	MOUNTAIN VIEW, CALIF.
24000	INTERNATIONAL RESISTANCE CO.	PHILADELPHIA, PA.
24930	KEMET DEPT. UNION CARBIDE CORP.	CLEVELAND, OHIO
26750	LYN-TRON	LOS ANGELES, CALIF.
35250	SANGAMO ELECTRIC	PICKENS, SO. CAROLINA

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS XX ± .03 XXX ± .010
ANGLES ± 0° 30'

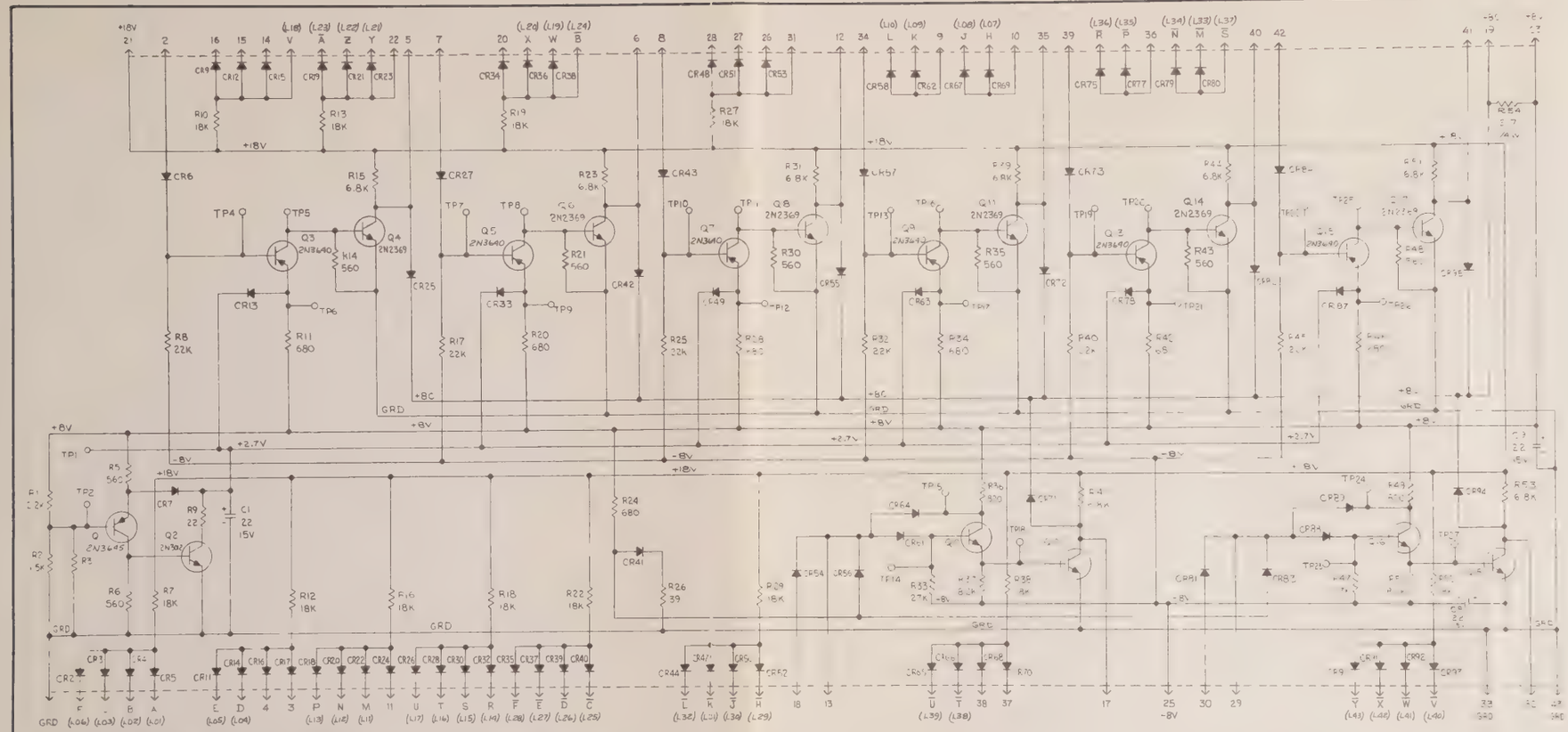
DRILLED HOLES
.040 TO .128 +.002, -.001
.136 TO .228 +.003, -.001
.234 TO .500 +.004, -.001
.515 TO .750 +.005, -.001
.765 TO 1.000 +.007, -.001
1.015 TO 2.000 +.010, -.001

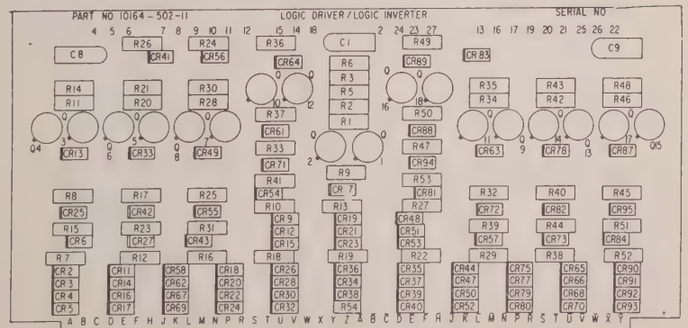
DRAWN G. HAMILTON 30 SEPT 66
CHECK
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10 ✓
DO NOT SCALE THIS DRAWING

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

FLIP - FLOP
300KC

SCALE: NONE
SIZE R
10160 - 502-11
WEIGHT
SHEET





SYM	ZONE	REVISIONS DESCRIPTION [1] MAY BE REWORKED [2] CANNOT BE REWORKED [3] NONE		DATE & APPROVAL
A		1. IN L/M ITEM 18 DIODE-050002-01, REFERENCE DESIGNATIONS WERE, CR3 THRU 7,9,11 THRU 28, CR30,32 THRU 44,47 THRU 58 CR61 THRU 73,75,77 THRU 84 CR87 THRU 95	3	EO 457
		2. ON F/D CR56 ANODE WAS TO GRD	3	EO 1366
		3. ON F/D & L/M, TXTOR-050006 2N3645 WAS TXTOR-003012 2N3012 EFFECT ON: RECORD	3	12-20-66
B		1. ON F/D, Q3,5,7,9,13,15 2N3640 WERE 2N3645	3	EO 1760 CG 12-17-66
		2. IN L/M TXTOR-050006 1 REQD WAS 7 REQD (DELETED Q3,5,7,9,13	1	
		3. ADDED TXTOR-050009, 6 REQD	1	
		4. DIODE-050002 82 REQD WAS 81 (ADDED CR64) EFFECT ON: NEXT PARTS MADE	1	

ITEM NO	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
1	1	RESMF -C00310	2.2KOHM P/M 5% 1/2W RL20 2225	24000	R1
2	1	RESMF -C00310	1.5KOHM P/M 5% 1/2W RL20 1525	24000	R2
3	1	RESMF -C00001	SELECT AT TEST 1/2W RL20 0005	24000	R3
4	8	RESMF -C00238	560 OHM P/M 5% 1/2W RL20 5615	24000	R5,6,14,21,30,35,43,48
5	12	RESMF -C00414	18 KOHM P/M 5% 1/2W RL20 1835	24000	R7,10,12,13,16,18,19,22,27
					R29,38,52
6	6	RESMF -C00418	22 KOHM P/M 5% 1/2W RL20 2235	24000	R8,17,25,32,40,45
7	1	RESMF -C00118	22 OHM P/M 5% 1/2W RL20 2205	24000	R9
8	7	RESMF -C00242	680 OHM P/M 5% 1/2W RL20 6815	24000	R11,20,24,28,34,42,46
9	8	RESMF -C00342	6.8KOHM P/M 5% 1/2W RL20 6825	24000	R15,23,31,39,41,44,51,53
10	1	RESMF -C00130	39 OHM P/M 5% 1/2W RL20 3905	24000	R26
11	2	RESMF -C00422	27 KOHM P/M 5% 1/2W RL20 2705	24000	R33,47
12	2	RESMF -C00246	820 OHM P/M 5% 1/2W RL20 8215	24000	R36,49
13	2	RESMF -C00346	8.2KOHM P/M 5% 1/2W RL20 8225	24000	R37,50
14	1	RESCC -C00022	2.7 OHM P/M 5% 1/4W CB2705	02500	R54
15	3	CAPAC -C60140	22 MF P/M 10% 15V K22C15K	24750	C1,8,9
16	1	TXTOR -C50006	TRANSISTOR 2N3645	19000	Q1
17	11	TXTOR -C50001	TRANSISTOR 2N2369	19000	Q2,4,6,8,10,11,12,14,16,17
					Q18
18	82	DIODE -050002-01	DIODE D6436-12	38000	CR2 THRU 7,9,11 THRU 28,
					30,32 THRU 44,47 THRU 58,
					61,62,63,65 THRU 73,75,
					77 THRU 84, 87 THRU 95,64
19	18	TXTMNT-C00001	TRANSISTOR MOUNT CSL88002	11250	
20	1	PCB -10164-11	CIRCUIT BOARD 10164-11	00002	
21	6	TXTOR-C50009	TRANSISTOR 2N3640	19000	Q3,5,7,9,13,15

REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
	10164-502-11	LOGIC DRIVER/INVERTER		

LIST OF MATERIAL OR PARTS LIST

00002	COMMERCIAL - VENDOR NOT SPECIFIED
02500	ALLEN BRADLEY
11250	CIRCUIT STRUCTURES LAB. COSTA MESA, CALIF.
19000	FAIRCHILD SEMICONDUCTOR
24000	INTERNATIONAL RESISTANCE CO.
24750	KEMET DEPT. UNION CARBIDE CORP. CLEVELAND, OHIO
380	SYLVANIA ELECTRIC PRODUCTS SEMI DIV.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS XX ± .03 XXX ± .010
ANGLES ± 0° 30'

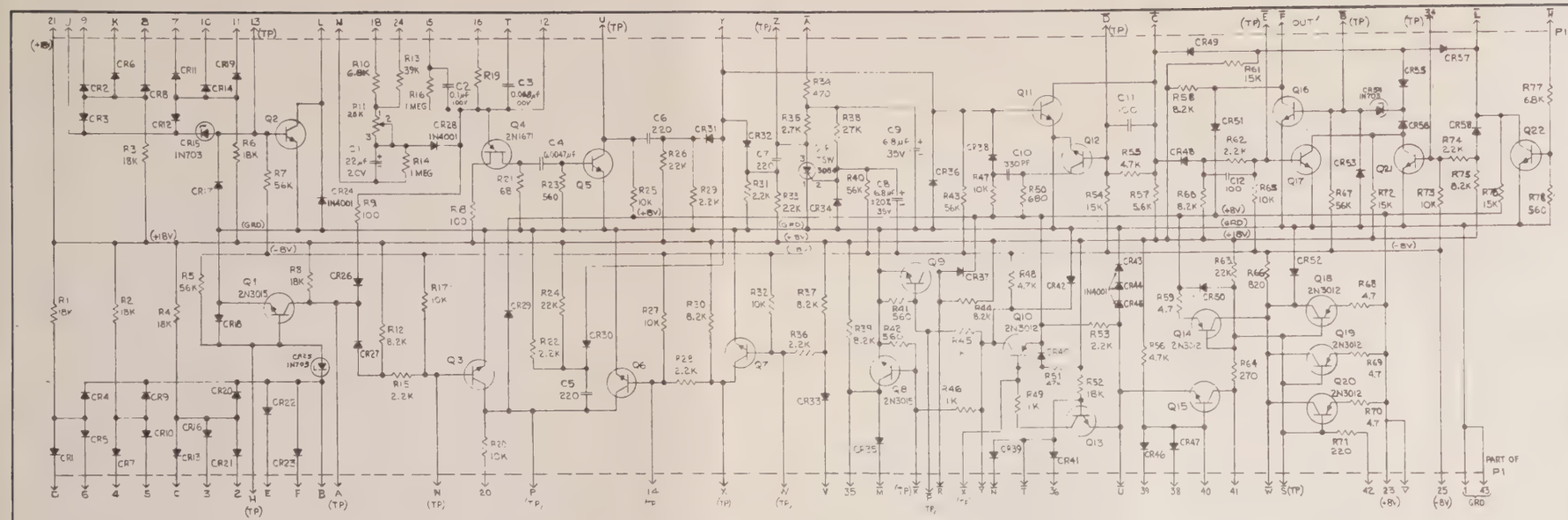
DRILLED HOLES
.040 TO .128 +.002 −.001
.136 TO .228 +.003 −.001
.234 TO .500 +.004 −.001
.515 TO .750 +.005 −.001
.765 TO 1.000 +.007 −.001
1.015 TO 2.000 +.010 −.001

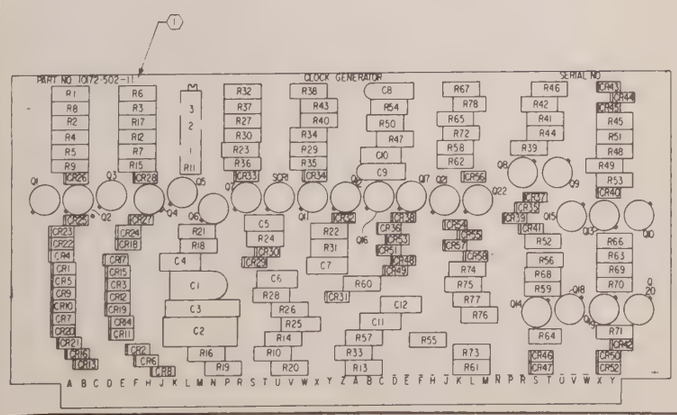
DRAWN — 4-4-65
CHECK
APPD.
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10
DO NOT SCALE THIS DRAWING

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

LOGIC DRIVER/INVERTER 300 KC

SCALE: NONE
SIZE: R
10164-502-11
WEIGHT
SHEET





THIS BOARD IS THE SAME AS BASIC EXCEPT FOR R47,R50&C10

(1) APPLY DASH NO. TO BOARD AS REQUIRED

00002	COMMERCIAL - VENDOR NOT SPECIFIED
02500	ALLEN BRADLEY — MILWAUKEE, WISC.
05675	BECKMAN INSTRUMENTS — FULLERTON, CALIF.
11250	CIRCUIT STRUCTURES LAB. — COSTA MESA, CALIF.
19000	FAIRCHILD SEMICONDUCTOR — MOUNTAIN VIEW, CALIF.
21001	GENERAL ELECTRIC CAPACITOR — IRMO, S.C.
21500	GENERAL ELECTRIC CO. SEM. DIV. — SYRACUSE, N.Y.
24000	INTERNATIONAL RESISTANCE CO. — PHILADELPHIA, PA.
24750	KEMET DEPT UNION CARBIDE CORP. — CLEVELAND, OHIO
29500	MOTOROLA, INC. — PHOENIX, ARIZ.
35250	SANGAMO ELECTRIC — PICKENS, S.CAROLINA
42700	TRANSITRON ELECTRONICS — WAKEFIELD, MASS.

ITEM NO	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
1	7	RESMF -000414	18 KOHM P/M 5% 1/2W RL20 1835	24000	R1,2,3,4,6,8,52
2	5	RESMF -000438	56 KOHM P/M 5% 1/2W RL20 5635	24000	R5,7,40,43,67
3	2	RESMF -000202	100 OHM P/M 5% 1/2W RL20 1015	24000	R9,18
4	2	RESMF -000342	6.8KOHM P/M 5% 1/2W RL20 6825	24000	R17,10
5	8	RESMF -000346	8.2KOHM P/M 5% 1/2W RL20 8225	24000	R12,30,37,39,44,58,60,75
6	1	RESMF -000430	39 KOHM P/M 5% 1/2W RL20 3935	24000	R13
7	9	RESMF -000318	2.2KOHM P/M 5% 1/2W RL20 2225	24000	R15,22,28,29,31,36,53,62
					R74
8	8	RESMF -000402	10 KOHM P/M 5% 1/2W RL20 1035	24000	R17,20,25,27,32,65,73,47
9	1	RESMF -000001	SELECT AT TEST 1/2W RL20 0005	24000	R19
10	1	RESMF -000142	68 OHM P/M 5% 1/2W RL20 6805	24000	R21
11	4	RESMF -000238	560 OHM P/M 5% 1/2W RL20 5615	24000	R23,41,42,78
12	4	RESMF -000418	22 KOHM P/M 5% 1/2W RL20 2235	24000	R24,26,33,63
13	1	RESMF -000322	2.7KOHM P/M 5% 1/2W RL20 2725	24000	R35
14	1	RESMF -000422	27 KOHM P/M 5% 1/2W RL20 2735	24000	R38
15	3	RESMF -000302	1 KOHM P/M 5% 1/2W RL20 1025	24000	R45,46,49
16	3	RESMF -000334	4.7KOHM P/M 5% 1/2W RL20 4725	24000	R48,55,56
17	1	RESMF -000242	680 OHM P/M 5% 1/2W RL20 6815	24000	R50
18	1	RESMF -000434	47 KOHM P/M 5% 1/2W RL20 4735	24000	R51
19	4	RESMF -000410	15 KOHM P/M 5% 1/2W RL20 1535	24000	R54,61,72,76
20	1	RESMF -000338	5.6KOHM P/M 5% 1/2W RL20 5625	24000	R57
21	1	RESMF -000222	270 OHM P/M 5% 1/2W RL20 2715	24000	R64
22	1	RESMF -000246	820 OHM P/M 5% 1/2W RL20 8215	24000	R66
23	1	RESMF -000218	220 OHM P/M 5% 1/2W RL20 2215	24000	R71
24	1	RESVAR-000090	POT 2.5 KOHM 1/2W 77PR25K	05675	R11
25	1	RESCC -001602	1.0MEGO P/M 5% 1/2W EB1055	02500	R14,16
26	4	RESCC -001034	4.7 OHM P/M 5% 1/2W EB4705	02500	R59,68,69,70
27	1	CAPAC -060190	22 MF P/M 10% 20V K22C220M	24750	C1
28	1	CAPAC -040120	.10 MF P/M 10% 100V 64P24AA104	21001	C2
29	1	CAPAC -040110	.068MF P/M 10% 100V 64P22AA683	21001	C3
30	1	CAPAC -040040	.0047MF P/M 10% 100V 64P10AA472	21001	C4

REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
	10172-502-11	CLOCK GENERATOR		

LIST OF MATERIAL OR PARTS LIST

1	1	CAPAC -030110	1 PF P/M 5% 500V CM15E221J	05250	CR1 THRU 14,16 THRU 23,24 CR27,29 THRU 42,46 THRU 53 CR55,56,57,58
	2	CAPAC -060230	6.8 MF P/M 10V 35V K6P8C35M	24750	
	1	CAPAC -030120	330 PF P/M 5% 500V CM15E331J	35250	C9
	2	CAPAC -030085	100 PF P/M 5% 500V CM15E101J	11250	C6,8
	14	TXTOR -003646	TRANSISTOR 2N3646	19000	Q2,3,5,6,7,9,11,12,13,15 Q16,17,21,22
	4	TXTOR -003015	TRANSISTOR 2N3015	19000	Q1,8
	1	TXTOR -001671	TRANSISTOR (SELECTED) 2N1671	21500	Q4
	5	TXTOR -003012	TRANSISTOR 2N3012	19000	Q10,14,18,19,20
	2	TXTMNT-000001	TRANSISTOR MOUNT CSL88002	11250	
42	44	DIODE -050002	DIODE 1N914	19000	
					CR55,56,57,58
	1	DIOD2 -000703	DIODE ZENER 1N703	29500	CR15,25,54
42	5	DIODE -004001	DIODE 1N4001	29500	CR24,28,43,44,45
43	1	SCR -050001	CONTROL RECTIFIER TSW3084	42000	SCR1
44	1	RESMF -000234	470 OHM P/M 5% 1/2W RL20 4715	24000	R34
45	1	PCB -010173	CIRCUIT BOARD 10173-502	00002	

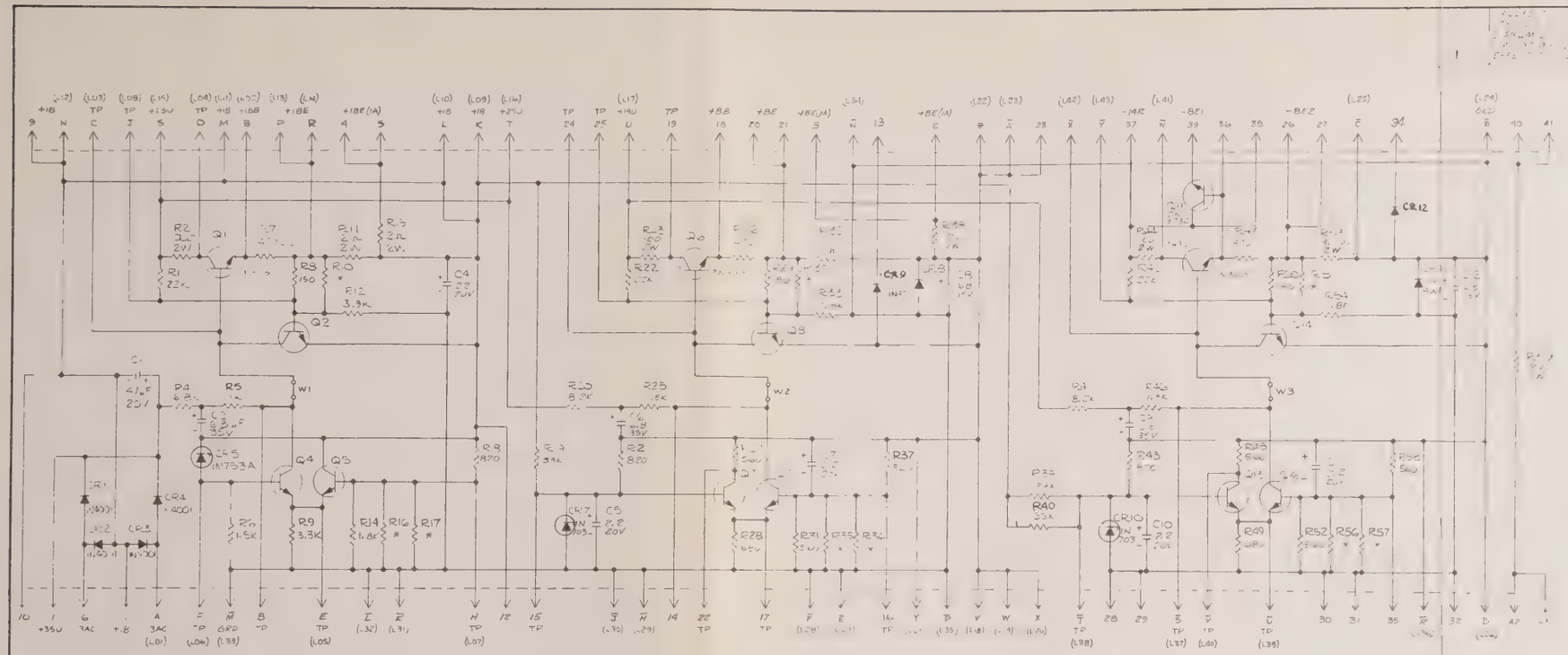
REVISIONS				
STK	ZONE	DESCRIPTION (1 MAY BE REWORKED 2 CANNOT BE REWORKED 3 NONE)	DATE & APPROVAL	
1		1 IN L/M DELETE R10 FROM RESMF000402 AND ADDED TO RESMF 000342 2 IN L/M RESVAR 0000 90 POT 25K OHM 1/2W 77PR25K WAS RESVAR 0000 80 POT 20K OHM 1/2 W 77PR20K 3. ON F/D R10 6.8K WAS 10 K 4 ON F/D R11, 25K WAS 20K 5. IN L/M TRANSISTOR 2N3646 WAS 2N2369 6. IN L/M C R TSW3034 WAS TSW6CC. EFFECT ON NEXT PARTS MADE.	E0 2656 8-16-68 S JOHNSON	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS XX ± .03 XXX ± .010 ANGLES ± 0° 30'	DRILLED HOLES .040 TO 1.285 + .002 — .001; .136 TO .228 + .003 — .001; .234 TO .500 + .004 — .001; .515 TO .750 + .005 — .001; .765 TO 1.000 + .007 — .001; 1.015 TO 2.000 + .010 — .001
DRAWN	
CHECK	
APPD	
APPD	
FINISH	
HEAT TREAT	
SURFACE ROUGHNESS PER MIL-STD-10	✓
DO NOT SCALE THIS DRAWING	

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

CLOCK GENERATOR

SCALE: NONE	SIZE R	10172-502-11
WEIGHT	SHEET	

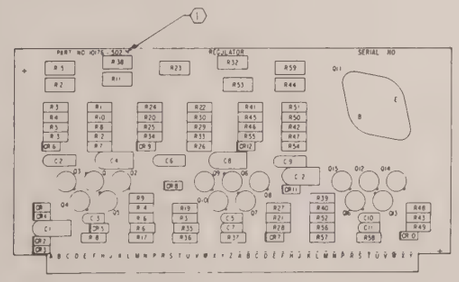


REVISIONS				
SYM	ZONE	DESCRIPTION		DATE & APPROVAL
		1 MAY BE REWORKED 2 CANNOT BE REWORKED 3 NONE		
A		1. IN L/M TXTOR-003566 2N3566 9 REQD WAS TXTOR-050001, 2N2369, 9 REQD 2. ON F/D R12 3.9K WAS 4.7K 3. IN L/M RESMF-000330. 3.9K RL20 3925 1 REQ'D WAS RESMF-000334 4.7K RL20 4725 1 REQD EFFECT ON: NEXT PARTS MADE		EO 1829 EO 2069 5-3-67 D.F

ITEM NO.	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
1	2	CAPAC-060150	68 MF P/M 10% 15V K68C15K	24750	C8, 12
2	1	CAPAC-060200	47 MF P/M 10% 20V K47C20K	24750	C3
3	.	CAPAC-060190	.22 MF P/M 10% 20V K22C20K	24750	C4
4	.	CAPAC-060230	6.8MF P/M 10% 35V K6R8C35K	24750	C2, 6, 9
5	4	CAPAC-060170	2.2MF P/M 10% 20V K2R2C20K	24750	C5, 7, 10, 11
6	6	DIODE-004001	DIODE 1N4001	29500	CR1,2,3,4,8,11
7	1	DIODZ-000753	DIODE ZENER 1N753A	29500	CR5
8	2	DIODZ-000703	DIODE ZENER 1N703	29500	CR7,10
9	3	RESMF-000210	150 OHM P/M 5% 1/2W RL20-1515	24000	R8,29,50
10	3	RESMF-000234	470 OHM P/M 5% 1/2W RL20-4715	24000	R7,26,47
11	.	RESMF-000238	560 OHM P/M 5% 1/2W RL20-5615	24000	R27,31,37,48,52,58
12	2	RESMF-000242	680 OHM P/M 5% 1/2W RL20-6815	24000	R28,49
13	3	RESMF-000246	820 OHM P/M 5% 1/2W RL20-8215	24000	R18,21,43
14	1	RESMF-000302	1 K OHM P/M 5% 1/2W RL20-1025	24000	R5
15	2	RESMF-000310	1.5K OHM P/M 5% 1/2W RL20-1525	24000	R6,25,46
16	3	RESMF-000314	1.8K OHM P/M 5% 1/2W RL20-1825	24000	R14,33,54
17	1	RESMF-000326	3.3K OHM P/M 5% 1/2W RL20-3325	24000	R9
18	1	RESMF-000330	3.9K OHM P/M 5% 1/2W RL20-3925	24000	R12
19	.	RESMF-000342	6.8K OHM P/M 5% 1/2W RL20-6825	24000	R4
20	2	RESMF-000346	8.2K OHM P/M 5% 1/2W RL20-8225	24000	R20,41
21	1	RESMF-000418	22 K OHM P/M 5% 1/2W RL20-2235	24000	R1,22,42
22	3	RESMF-000426	33 K OHM P/M 5% 1/2W RL20-3335	24000	R19,38,40
23	5	RESWW-002116	2 OHM P/M 5% 2W BWH-2005	24000	R11,15,32,38,59
24	1	RESWW-002124	3 OHM P/M 5% 2W BWH-3005	24000	R53
25	1	RESWW-002362	1 OHM P/M 5% 2W BWH-1015	24000	R2,23,44
26	9	RESMF-000611	SELECT AT TEST 1/2W RL20-0005	24000	R10,16,17,30,35,36,51,
					R56,57
27	9	TXTOR-003566	TRANSISTOR 2N3566	19000	Q2,4,5,7,8,10,13,14,16
28	3	TXTOR-003015	TRANSISTOR 2N3015	19000	Q1,6,12
29	1	TXTOR-003232	TRANSISTOR 2N3232	35675	Q11
30	12	12012-206	TRANSISTOR MOUNT	00001	
31	1	HTSINK-000001	HEAT SINK UP1-T03B	23375	Q11
32	1	PCB-010177	CIRCUIT BOARD 10177	00002	
33	3		JUMPER 22AWG BUS WIRE 3"		W1,2,3
34	2	MS35233-28	SCREW, PAN HEAD	00002	
35	.	MS15795-5	WASHER, PLAIN	00002	
36	2	MS35649-64	NUT, HEX	00002	
37	2	DIODE-050002	DIODE 1N914	19000	CR9,12

ITEM NO.	REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
1	1	10176-502-11	ASSEMBLY		

LIST OF MATERIAL OR PARTS LIST



DETAIL A
SHOWING POSITION OF JUMPERS (W1, W2 & W3) TYPICAL 3 PLACES (Q3, Q9 & Q15.)

JUMPER ON COMPONENT SIDE.

2. CR9 AND CR12 LOCATED OUT OF SEQUENCE.

(1) APPLY DASH NUMBER TO CIRCUIT BOARD PART NO. PER COP SPEC A0184-001 USING .10 HIGH WHITE CHARACTERS.

00002	COMMERCIAL - VENDOR NOT SPECIFIED	
00001	CALIFORNIA COMPUTER PRODUCTS, INC.	ANAHEIM, CALIF.
19000	FAIRCHILD SEMICONDUCTOR	MOUNTAIN VIEW, CALIF.
23375	IERC DIV. INTNATL ELEC. RESEARCH CO.	BURBANK, CALIF.
24000	INTERNATIONAL RESISTANCE CO.	PHILADELPHIA, PA.
24750	KEMET DEPT. UNION CARBIDE CORP.	CLEVELAND, OHIO
29500	MOTOROLA, INC.	PHOENIX, ARIZONA
35675	SILICON TRANSISTOR CORP.	LONG ISLAND, N. Y.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS .XX ± .03 .XXX ± .010
ANGLES ± 0° 30'

DRILLED HOLES
.040 TO .1285 + .002, — .001
.136 TO .228 + .003, — .001
.234 TO .500 + .004, — .001
.515 TO .750 + .005, — .001
.765 TO 1.000 + .007, — .001
1.015 TO 2.000 + .010, — .001

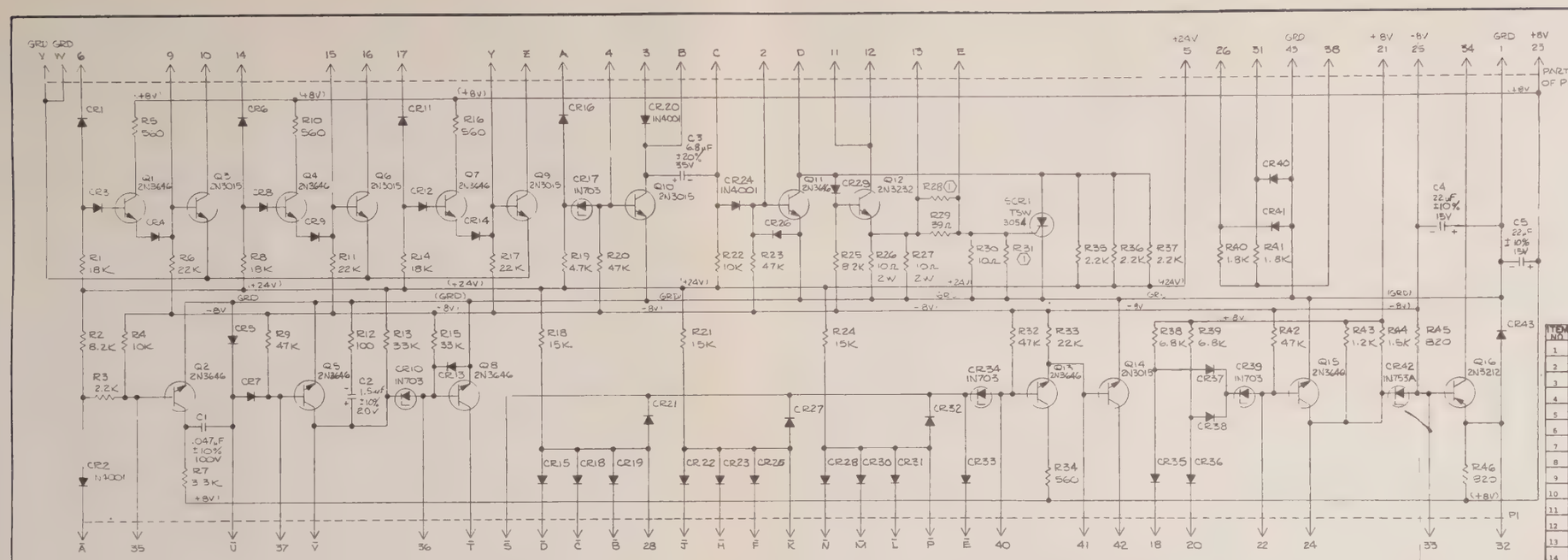
DRAWN	R Warner	9-1-64
CHECK		10-1-65
APPD		11-1-65
APPD		
FINISH		
HEAT TREAT		
SURFACE ROUGHNESS PER MIL-STD-10	✓	

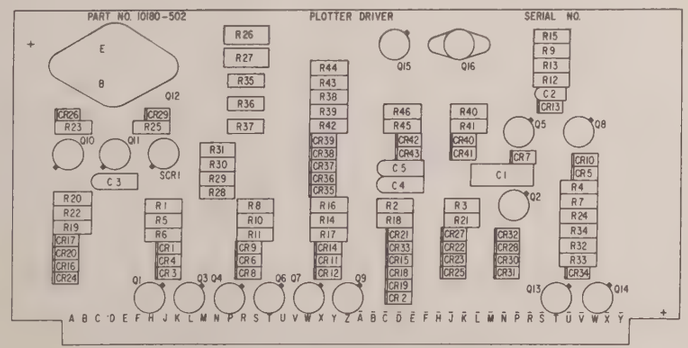
DO NOT SCALE THIS DRAWING

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

ASSEMBLY-REGULATOR

SCALE: NONE
SIZE: R
10176-502-11
WEIGHT
SHEET





② Q12 TO BE ASSEMBLED PER CCP SPEC A0805-002 SECTION 9

③ Q16 TO BE ASSEMBLED PER CCP SPEC A0805-002 SECTION 14

00002	COMMERCIAL - VENDOR NOT SPECIFIED	
11250	CIRCUIT STRUCTURES LAB	COSTA MESA, CALIFORNIA
16750	DELCO RADIO DIV. GM	KOKOMO, INDIANA
19000	FAIRCHILD SEMICONDUCTOR	MOUNTAIN VIEW, CALIFORNIA
21001	GENERAL ELECTRIC CAPACITOR	IRMO, SOUTH CAROLINA
24000	INTERNATIONAL RESISTANCE COMPANY	PHILADELPHIA, PENNSYLVANIA
24750	KEMET DEPT. UNION CARBIDE CORPORATION	CLEVELAND, OHIO
29500	MOTOROLA INC.	PHOENIX, ARIZONA
35675	SILICON TRANSISTOR CORPORATION	LONG ISLAND, NEW YORK
42000	TRANSITRON ELECTRONICS	WAKEFIELD, MASSACHUSETTS

ITEM NO	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
32	35	DIODE -050002	DIODE 1N914	19000	CR1,3,4, THRU 9, 11 THRU 16,18,19,21,22,23,25 THRU 33,35 THRU 38,40,41,43
33	3	DIODE -004001	DIODE 1N4001	29500	CR2,20,24
34	4	DIODE -000703	DIODE ZENER 1N703	29500	CR10,17,34,39
35	1	DIODE -000753	DIODE ZENER 1N753A	29500	CR42
36	1	PCB -010181	CIRCUIT BOARD 10181-502	00002	

ITEM NO	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
1	1	RESMF -000102	10 OHM P/M 5% 1/2W RL20 1005	24000	R30
2	1	RESMF -000130	39 OHM P/M 5% 1/2W RL20 3905	24000	R29
3	1	RESMF -000202	100 OHM P/M 5% 1/2W RL20 1015	24000	R12
4	4	RESMF -000238	560 OHM P/M 5% 1/2W RL20 5615	24000	R5 10,16 34
5	2	RESMF -000246	820 OHM P/M 5% 1/2W RL20 8215	24000	R45,46
6	1	RESMF -000306	1.2K OHM P/M 5% 1/2W RL20 1225	24000	R43
7	1	RESMF -000310	1.5K OHM P/M 5% 1/2W RL20 1525	24000	R44
8	2	RESMF -000314	1.8K OHM P/M 5% 1/2W RL20 1825	24000	R40,41
9	4	RESMF -000318	2.2K OHM P/M 5% 1/2W RL20 2225	24000	R3 35 36 37
10	1	RESMF -000326	3.3K OHM P/M 5% 1/2W RL20 3325	24000	R7
11	1	RESMF -000334	4.7K OHM P/M 5% 1/2W RL20 4725	24000	R19
12	2	RESMF -000342	6.8K OHM P/M 5% 1/2W RL20 6825	24000	R38,39
13	2	RESMF -000346	8.2K OHM P/M 5% 1/2W RL20 8225	24000	R2,25
14	2	RESMF -000402	10 K OHM P/M 5% 1/2W RL20 1035	24000	R4,22
15	3	RESMF -000410	15 K OHM P/M 5% 1/2W RL20 1535	24000	R18,21,24
16	3	RESMF -000414	18 K OHM P/M 5% 1/2W RL20 1835	24000	R1,8,14
17	4	RESMF -000418	22 K OHM P/M 5% 1/2W RL20 2235	24000	R6,11,17,33
18	2	RESMF -000426	33 K OHM P/M 5% 1/2W RL20 3335	24000	R13,15
19	5	RESMF -000434	47 K OHM P/M 5% 1/2W RL20 4735	24000	R9,20,23,32,42
① 20	2	RESMF -000001	SELECT AT TEST 1/2W RL20 0005	24000	R28,31
21	2	RESWW -002202	10 OHM P/M 5% 2W BWR 1005	24000	R26,27
22	1	CAPAC -040100	.047 MF P/M 10% 100V 64F19AA473	21001	C1
23	1	CAPAC -060165	1.5 MF P/M 10% 20V K1R5C20K	24750	C2
24	1	CAPAC -060230	6.8 MF P/M 10% 35V K6R8C35K	24750	C3
25	2	CAPAC -060140	22 MF P/M 10% 15V K22C15K	24750	C4,5
26	9	TXTOR -003646	TRANSISTOR 2N3646	19000	Q1,2,4,5,7,8,11,13,15
27	5	TXTOR -003015	TRANSISTOR 2N3015	19000	Q3,6,9,10,14
② 28	1	TXTOR -003232	TRANSISTOR 2N3232	35675	Q12
③ 29	1	TXTOR -003212	TRANSISTOR 2N3212	16750	Q16
30	1	SCR -050003	CONTROL RECTIFIER TSW3054	42000	SCR1
31	15	TXTMNT-000001	TRANSISTOR MOUNT CSL8B002	11250	

REVISIONS				
STW	ZONE	DESCRIPTION [1] MAY BE REWORKED [2] CANNOT BE REWORKED [3] NONE		DATE & APPROVAL
	A	1. REVISED FORMAT 2. IN L/M DELETED ITEM 40 MS35233 -3 SCREW, PAN HEAD, 2 REQD. ITEM 41, MS15795-2 WASHER, PLAIN, 2 REQD. ITEM 42 MS35649-24 NUT, HEX 2 REQD EFFECT ON: ITEM 1 RECORD ITEM 2 NEXT PARTS MADE-PARTS MADE OK		4/27/66 RR 256
	B	1. IN L/M ADDED MS35233-19 SCREW, MS35233-78 WASHER, C6942-1-440 NUT, 2 REQD EFFECT ON: NEXT PARTS MADE		E01762 CG 5-11-66
	1	1. L/M 003646 TRANSISTOR WAS 050001 2. FID 2N3646 WAS 2N2369 EFFECT ON: RECORD		31 MAY 68 JK mm

REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
	10180-502	PLOTTER DRIVER		

LIST OF MATERIAL OR PARTS LIST

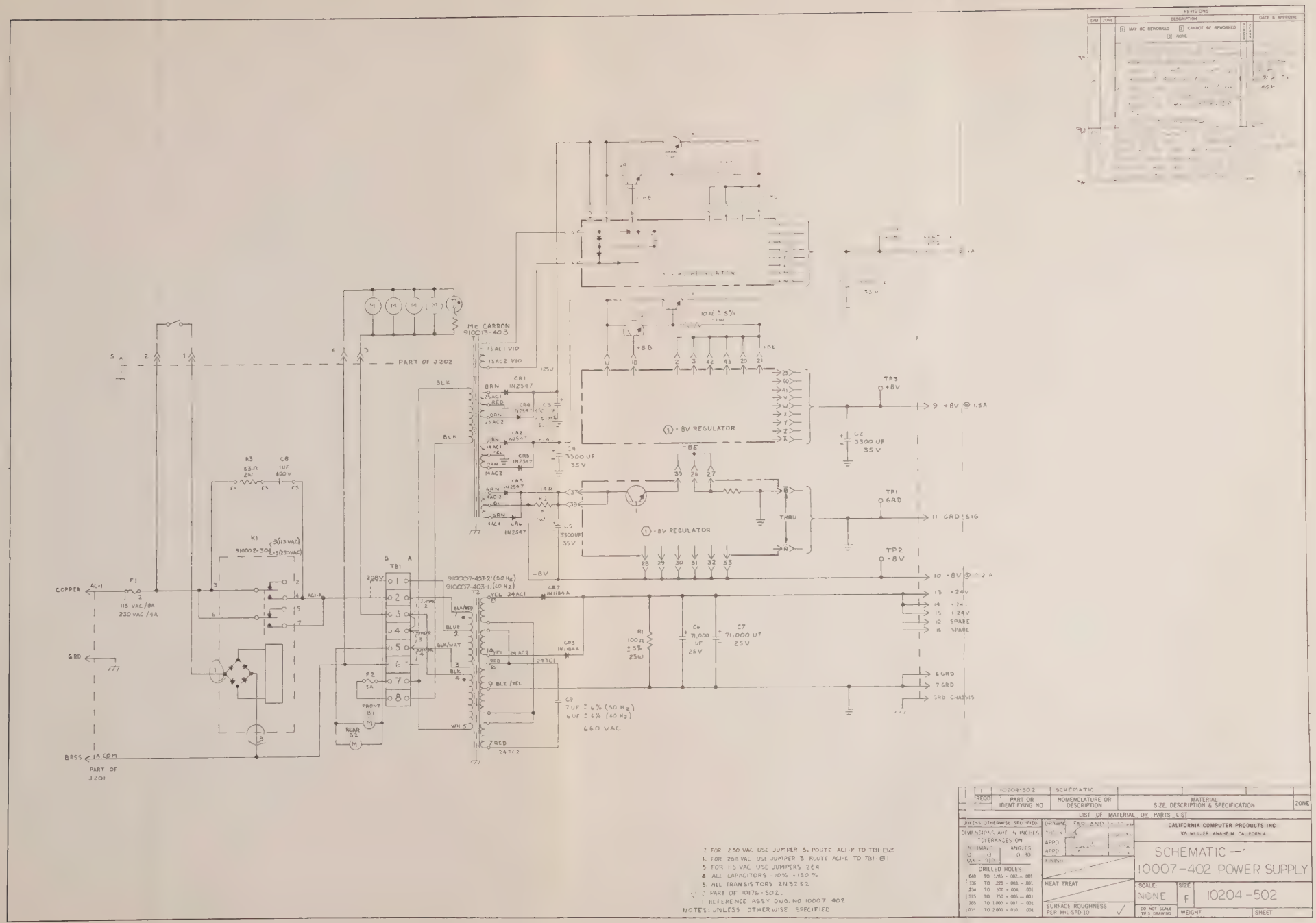
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS .XX ± .03 .XXX ± .010
ANGLES ± 0° 30'
DRILLED HOLES
.040 TO .128 +.002,—.001
.136 TO .228 +.003,—.001
.234 TO .500 +.004,—.001
.515 TO .750 +.005,—.001
.765 TO 1.000 +.007,—.001
1.015 TO 2.000 +.010,—.001

DRAWN R WARNER 1-26-65
CHECK 4-21-66
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10 ✓

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

PLOTTER DRIVER

SCALE: NONE
SIZE: R
10180-502
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET



NOTES: UNLESS OTHERWISE SPECIFIED

1. FOR 230 VAC USE JUMPER 3. ROUTE AC1-K TO TB1-B2.
2. FOR 208 VAC USE JUMPER 3 ROUTE AC1-K TO TB1-B1
3. FOR 115 VAC USE JUMPERS 2&4
4. ALL CAPACITOR'S -10% +150%
5. ALL TRANSISTORS 2N5232
6. PART OF 10176-502.
7. REFERENCE ASSY DWG. NO 10007-402

REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
1	10204-502	SCHEMATIC		

LIST OF MATERIAL OR PARTS LIST

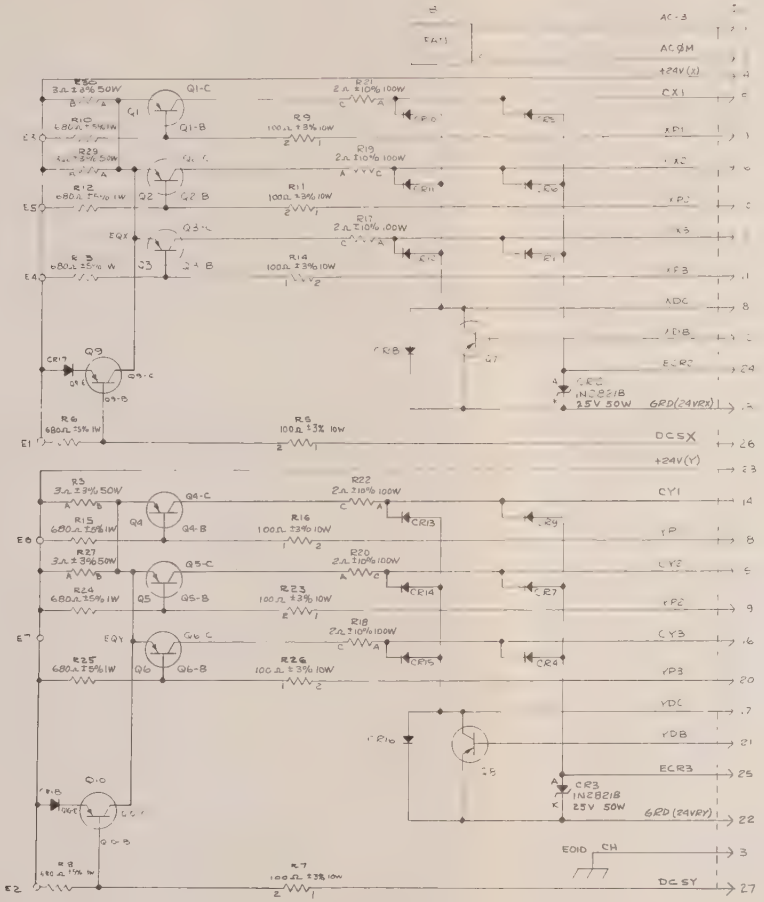
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
NOMINAL ANGLES
.X ±.1 ±.5°
.XX ±.01 ±.25°
DRILLED HOLES
.040 TO 1.055 - .002 - .001
.136 TO .228 - .003 - .001
.234 TO .500 + .004 - .001
.515 TO .750 + .005 - .003
.765 TO 1.000 + .007 - .001
1.015 TO 2.000 + .010 - .001

DRAWN FARLAND
CHK'D
APP'D
APP'D
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10 ✓

CALIFORNIA COMPUTER PRODUCTS INC.
XM MILLER ANAHEIM CALIFORNIA

SCHEMATIC —
10007-402 POWER SUPPLY

SCALE: NONE
SIZE: F
10204-502
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET



3. REF ASSY NO. 10832-203
2. ALL DIODES ARE WESTINGHOUSE 368B.
1. ALL TRANSISTORS ARE 2N1560
NOTE: UNLESS OTHERWISE SPECIFIED.

REVISIONS			
ITM	ZONE	DESCRIPTION	DATE & APPROVAL
		1 MAY BE REWORKED 2 CANNOT BE REWORKED 3 NONE	
		2 CATH DESIG (PIN THE [illegible] CENTER TAPE	
		3 [illegible] WAS "A DELETED" PER [illegible] SET AT FUNCTIONAL TEST"	
		4 ALL DIODES 368B WERE 367P. EFFECT ON RECORD	
E		1 ON F/D REMOVED RESISTORS R1, R2, R9 & R28. EFFECT ON [illegible]	BSMW 2-15-61

ITM	QTY REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
	1	10209-502	SCHEMATIC		

LIST OF MATERIAL OR PARTS LIST

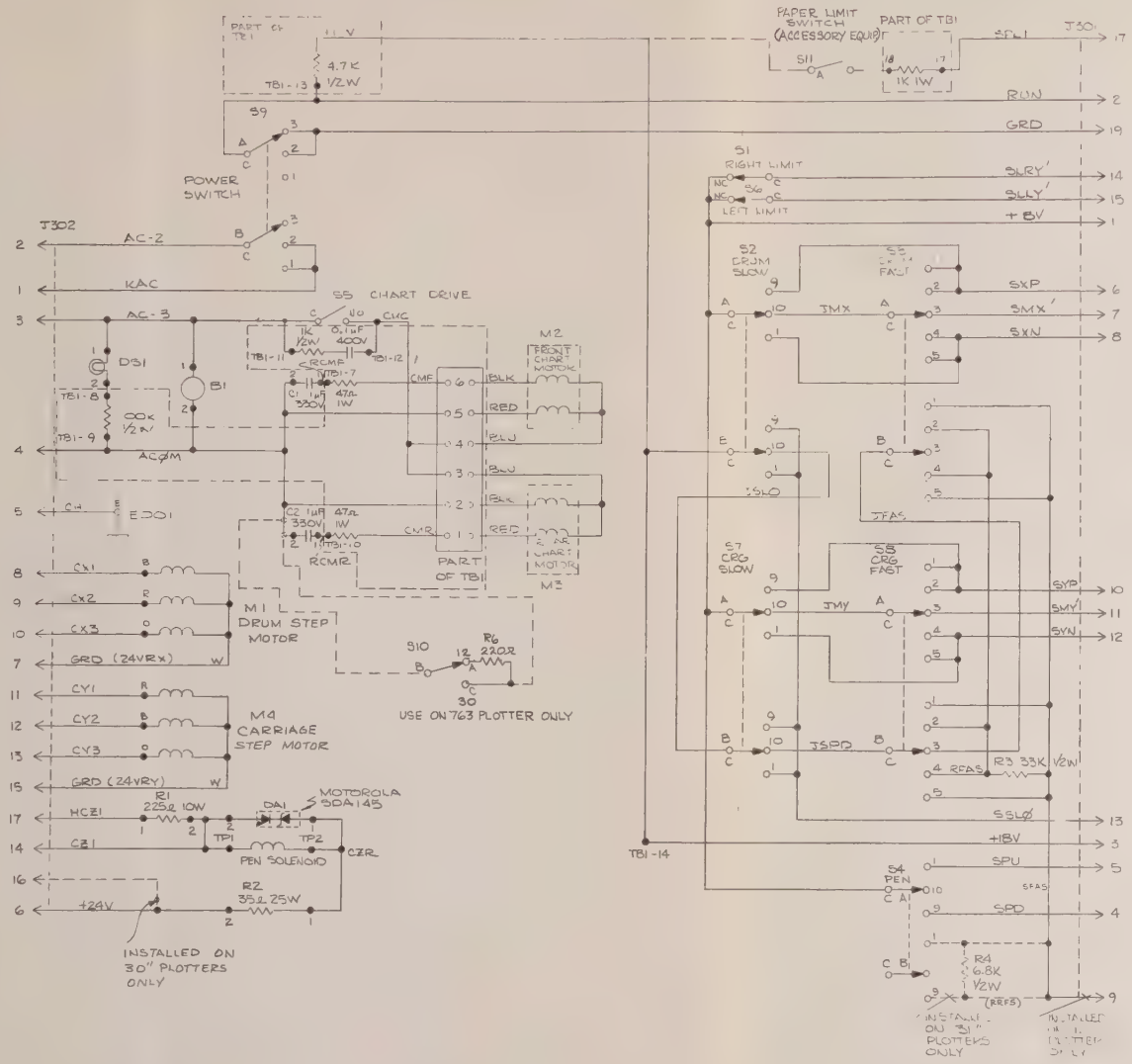
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: .XX ± .03, .XXX ± .010
ANGLES ± 0° 30'
DRILLED HOLES
.040 TO .1285 +.002, —.001
.136 TO .228 +.003, —.001
.234 TO .500 +.004, —.001
.515 TO .750 +.005, —.001
.765 TO 1.000 +.007, —.001
1.015 TO 2.000 +.010, —.001

DRAWN C. GAMERO 2-6-61
CHECK
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10 ✓
DO NOT SCALE THIS DRAWING

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

SCHEMATIC - [illegible] (10209-502)

SCALE: NONE
SIZE: D
10209-502
WEIGHT
SHEET



REVISIONS				
SYM	ZONE	DESCRIPTION		DATE & APPROVAL
		1 MAY BE REWORKED 2 CANNOT BE REWORKED 3 NONE		
A		1. IN SWITCH S4-B, CONTACT 9 WAS 10. EFFECT ON: RECORD		
B		1. IN SWITCH S4-A, CONTACT 9 WAS 10 AND CONTACT 10 WAS 9. 2. ADDED PAPER LIMIT SWITCH CIRCUIT # S10, R6 EFFECT ON: NONE		

REQD	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE
1	10243-502	SCHEMATIC		

LIST OF MATERIAL OR PARTS LIST

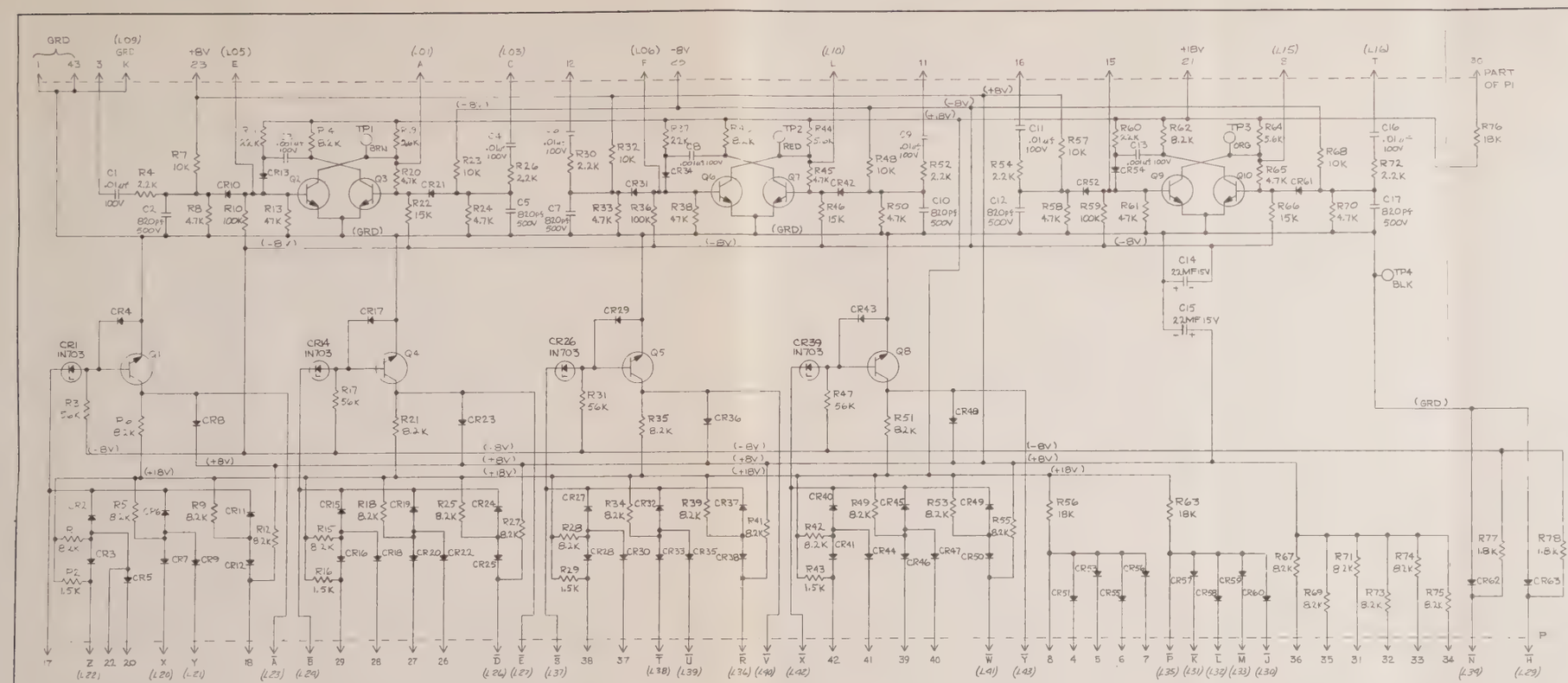
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: XX ± .03, XXX ± .010
ANGLES ± 0° 30'
DRILLED HOLES
.040 TO .1285 + .002, — .001
.136 TO .228 + .003, — .001
.234 TO .500 + .004, — .001
.515 TO .750 + .005, — .001
.765 TO 1.000 + .007, — .001
1.015 TO 2.000 + .010, — .001

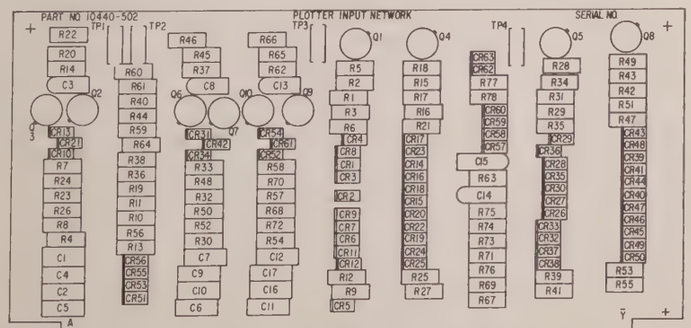
DRAWN R WARNER 4-7-65
CHECK
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10

CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

SCHEMATIC — SERIES 700 PLOT HEAD

SCALE: NONE
SIZE: D
10243-502
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET





REVISIONS				
ITR	ZONE	DESCRIPTION		DATE & APPROVAL
		1 MAY BE REWORKED 2 CANNOT BE REWORKED 3 NONE		
A		INITIAL RELEASE		
1		1 E.O. 1786 OBSOLETE 2.TRANSISTOR 2N3646 WAS 2N2369 EFFECT ON: ITEM 1-SER 26 & SUBS ITEM 2-NEXT PARTS		

ITEM NO.	REQD	PART NO.	DESCRIPTION	VENDOR	REFERENCE DESIGNATION
1	4	RESMF-000310	1.5 KOHM P/M 5% 1/2W RL20 1525	24000	R2,R16,R29,R43
2	2	RESMF-000314	1.8 KOHM P/M 5% 1/2W RL20 1825	24000	R71,78
3	6	RESMF-000318	2.2 KOHM P/M 5% 1/2W RL20 2225	24000	R4,26,30,52,54,72
4	9	RESMF-000334	4.7 KOHM P/M 5% 1/2W RL20 4725	24000	R8,20,24,33,45,50,58,65,70
5	3	RESMF-000338	5.6 KOHM P/M 5% 1/2W RL20 5625	24000	R19,44,64
6	29	RESMF-000346	8.2 KOHM P/M 5% 1/2W RL20 8225	24000	R1,5,6,9,12,14,15,18,21,25
					27,28,34,35,39,40,41,42,69
					51,53,55,62,67,69,71,73,74
					75
7	6	RESMF-000402	10 KOHM P/M 5% 1/2W RL20 1035	24000	R7,23,32,48,57,68
8	3	RESMF-000410	15 KOHM P/M 5% 1/2W RL20 1535	24000	R22,46,66
9	3	RESMF-000418	18 KOHM P/M 5% 1/2W RL20 1835	24000	R36,63,76
10	3	RESMF-000418	22 KOHM P/M 5% 1/2W RL20 2235	24000	R11,37,60
11	3	RESMF-000434	47 KOHM P/M 5% 1/2W RL20 4735	24000	R13,38,61
12	4	RESMF-000438	56 KOHM P/M 5% 1/2W RL20 5635	24000	R3,17,31,47
13	3	RESMF-000502	100 KOHM P/M 5% 1/2W RL20 1045	24000	R10,36,59
14	59	DIODE-030001	DIODE 1N914	19000	CR2 through 13, 15 through
					25, 27 through 38, 40
					through 63,
15	4	DIODZ-000703	ZENER DIODE 1N703	29500	CR1,14,26,39
16	6	CAPAC-030145	820 PF P/M 5% 500V CM15E821J	35250	C2,5,7,10,12,17
17	3	CAPAC-040005	0.001 MF P/M 10% 100V 64F10AA102	21001	C3,8,13
18	6	CAPAC-040060	0.01 MF P/M 10% 100V 64F10AA103	21001	C1,4,6,9,11,16
19	2	CAPAC-060140	22 MF P/M 10% 15V K22C15K	24750	C14,15
20	10	TXTOR-CD3646	TRANSISTOR 2N3646	19000	Q1 through Q10
21	10	TXTMNT-000001	TRANSISTOR MOUNT CS18002	11250	Q1 through Q10
22	1	TSTPT-000014	TEST JACK BROWN 119437-D	43250	TP1
23	1	TSTPT-000012	TEST JACK RED 119437-B	43250	TP2
24	1	TSTPT-000016	TEST JACK ORANGE 119437-F	43250	TP3
25	1	TSTPT-000013	TEST JACK BLACK 119437-C	43250	TP4
26	1	PCB-010441	CIRCUIT BOARD 10441-502	00002	

00002	Commercial - Vendor not specified	Costa Mesa, Calif.
11250	Circuit Structures Lab	Mountain View, Calif.
19000	Fairchild Semiconductor	Irmo, S. C.
21001	General Electric Capacitor	Philadelphia, Pa.
24000	International Resistance Co.	Cleveland, Ohio
24750	Kemet Dept., Union Carbide Corp.	Phoenix, Arizona
29500	Motorola, Inc.	Pickens, S. Carolina
35250	Sangamo Electric	Newtonville, Mass.
43250	Ucinite Co., Div. of United-Carr	

1	10440-502	INPUT NETWORK		
REQD	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SIZE, DESCRIPTION & SPECIFICATION	ZONE

LIST OF MATERIAL OR PARTS LIST

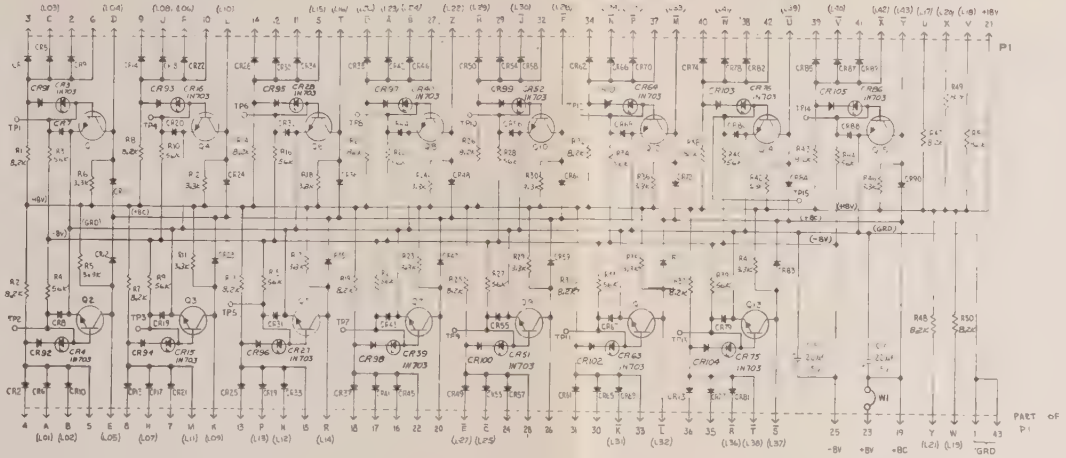
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS .XX ±.03 .XXX ±.010
ANGLES ±0° 30'
DRILLED HOLES
.040 TO .1285 +.002, -.001
.136 TO .228 +.003, -.001
.234 TO .500 +.004, -.001
.515 TO .750 +.005, -.001
.765 TO 1.000 +.007, -.001
1.015 TO 2.000 +.010, -.001

DRAWN W. Swanson 2-9-66
CHECK
APPD
APPD 10-12-66
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10 ✓
DO NOT SCALE THIS DRAWING

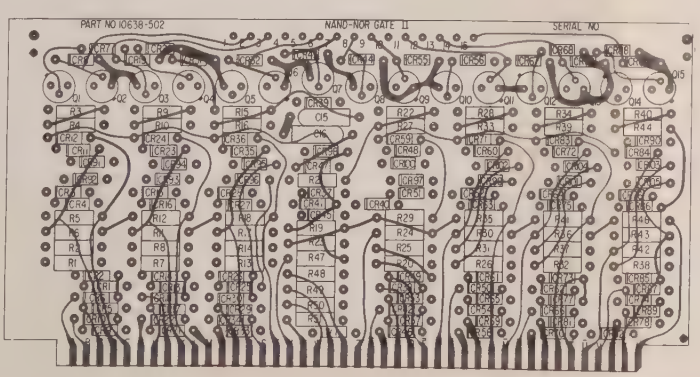
CALIFORNIA COMPUTER PRODUCTS INC.
305 MULLER, ANAHEIM, CALIFORNIA

PLOTTER INPUT NETWORK

SCALE: NONE
SIZE R
10440-502
WEIGHT
SHEET



SOLDER ANODE OF CR TO GRD BUSS PER EO 28318 FOR ALL M/C BOARDS



CR105
IN
C16
TP5
Q15
R15
LAST REF DES USED

ITEM NO	QTY	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	REFERENCE DESIG
10	2	10203-505-916	CAPACITOR	C15, 16
9	1	10638-512-000	PRINTED BOARD	
8	15			TP2 THRU TP15
7	9			Q THRU Q9
6	90	10201-504-000	DIODE	CR1,2,5 THRU 16,17 THRU 26, 29 THRU 38,41 THRU 55
5	15			CR3,4,27,28,39,40,56 THRU 64
4	1	41200-8	JUMPER LEAD	W1
3	15	10222-504-964	RESISTOR	56 KOHM ±5% 1/2W R28,33,37,39,40,44, R39,43,101(W1),123,29
2	20	10222-504-644	RESISTOR	8.2 KOHM ±5% 1/2W R1,2,5,7,13,14,19,20,25,26, 31,32,37,38,43,47,48,49,50,51
1	15	10222-504-625	RESISTOR	3.3 OHM ±5% 1/2W R3,6,11,12,17,18,23,24,29
	1	10638-505-000	ASSEMBLY	31,35,36,41,42,46

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: XX ± 03, XXX ± 010
ANGLES ± 0° 30'
DRILLED HOLES
.089 TO 1.285 +.002 −.001
1.136 TO 2.218 +.003 −.001
2.234 TO 3.139 +.004 −.001
3.515 TO 7.961 +.005 −.001
7.985 TO 11.000 +.007 −.001
12.013 TO 12.000 +.010 −.001

DRAWN
CHECK
APPD
APPD
FINISH
HEAT TREAT
SURFACE ROUGHNESS PER MIL-STD-10

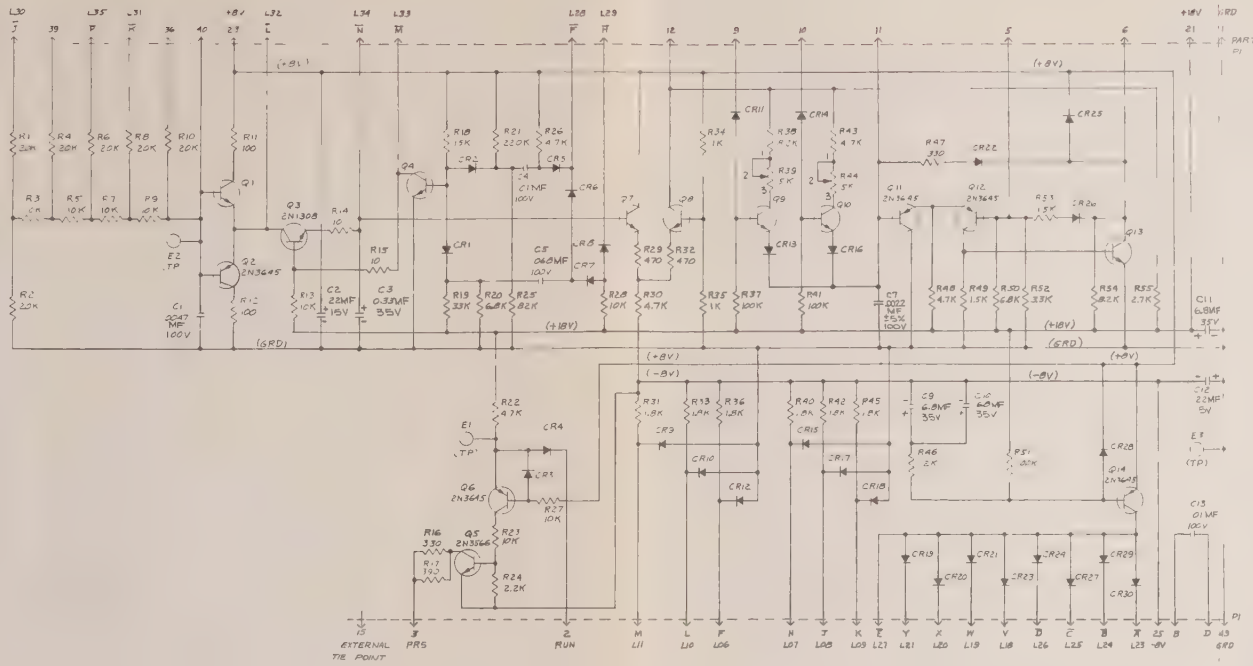
CALIFORNIA COMPUTER PRODUCTS INC
305 MULLER, ANAHEIM, CALIFORNIA

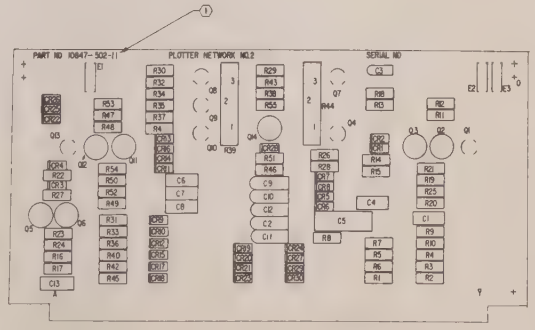
ASSEMBLY
NAND-NOR GATE
IMC

SIZE E | 10638-502-000
SCALE
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET

8. REF DESIGNATIONS C1 THROUGH C14 ARE NOT USED
7. CR 91 THRU CR 105 ARE LOCATED OUT OF SEQUENCE
6. TO BE SELECTED AT FUNCTIONAL TEST
5. CAPACITOR VALUES ARE IN MICROFARADS ±10% AND ARE RATED AT 15 VOLTS
4. TRANSISTORS ARE 2N3946 OR EQUIVALENT
3. DIODES ARE 1N 914 OR EQUIVALENT
2. RESISTOR VALUES ARE IN OHMS ±5% AND ARE 1/2 WATT
1. APPLY DASH NO. AND REVISION NO. USING WHITE CHARACTERS PER COP SPEC NO. A 001

NOTE: UNLESS OTHERWISE SPECIFIED





2. THIS BOARD IS IDENTICAL TO BASIC EXCEPT FOR C6,C7,C8
1. APPLY DASH NO. TO BOARD AS REQUIRED.

NOTE. UNLESS OTHERWISE SPECIFIED

ITEM NO	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	VENDOR	REFERENCE DESIG	ITEM NO
		LIST OF MATERIAL OR PARTS LIST			
1	1350-206-002	TEST JACK RED		E2	42
1	1350-206-001	TEST JACK BRN		E1	43
1	1350-206-010	TEST JACK BLK		E3	41
7	10002-206	TRANSISTOR MOUNT			40
3	10205-505-290	CAPACITOR - 6.8MF ±10% 35V		C9,10,11	39
2	10203-505-316	- .22 MF ±10% 15V		C2,12	38
1	10311-505-190	- .068 MF ±10% 100V		C5	37
1	10225-805-225	CAPACITOR - .33 MF ±10% 35V		C3	36
1	10501-505-116	CAPACITOR - .0022 MF ±5% 100V		C7	35
2	10311-505-150	CAPACITOR - .01 MF ±10% 100V		C4,13	34
1	10311-505-132	CAPACITOR - .0047 MF ±10% 100V		C1	33
					32
1	10404-507	TRANSISTOR	2N3646	Q5	31
7	10401-507		2N3646	Q1,4,7,8,9,Q10,Q13	30
1	10202-507		2N3308	Q3	29
5	10304-507	TRANSISTOR	2N3645	Q2,6,Q11,Q12,Q14	28
30	10201-506	DIODE	1N914	CR1 THRU CR30	27
					26
1	10222-504-516	RESISTOR-220K OHM ±5% 1/2W		R21	25
3	10222-504-500	-100K OHM ±5% 1/2W		R37,41,51	24
1	10222-504-494	-82K OHM ±5% 1/2W		R25	23
1	10222-504-478	-33K OHM ±5% 1/2W		R19	22
6	10222-504-464	-20K OHM ±5% 1/2W		R1,2,4,6,8,10	21
1	10222-504-458	-15K OHM ±5% 1/2W		R18	20
1	10222-504-454	-12K OHM ±5% 1/2W		R46	19
8	10222-504-450	-10K OHM ±5% 1/2W		R31,33,36,45,23,27,28	18
2	10222-504-694	-82K OHM ±5% 1/2W		R38,54	17
6	10222-504-440	RESISTOR -68K OHM ±5% 1/2W		R20,50	16
2	10223-504-434	POTENTIOMETER-5K OHM .5W MI		R39,44	15
5	10222-504-432	RESISTOR -4.7K OHM ±5% 1/2W		R22,26,30,43,48	14
1	10222-504-425	-3.3K OHM ±5% 1/2W		R52	13
1	10222-504-421	-2.7K OHM ±5% 1/2W		R55	12
1	10222-504-416	-2.2K OHM ±5% 1/2W		R24	11
6	10222-504-412	-1.8K OHM ±5% 1/2W		R31,33,36,40,42,45	10
2	10222-504-409	-1.5K OHM ±5% 1/2W		R49,53	9
2	10222-504-400	-1K OHM ±5% 1/2W		R34,35	8
2	10222-504-392	-470 OHM ±5% 1/2W		R29,32	7
1	10222-504-379	-330 OHM ±5% 1/2W		R17	6
2	10222-504-375	-330 OHM ±5% 1W		R16,47	5
2	10222-504-370	-100 OHM ±5% 1/2W		R11,12	4
2	[illegible]	RESISTOR-10 OHM ±5% 1/2W		R14,15	3
					2
1	848 502	PRINTED BOARD			1
1	554 502	ASSEMBLY			

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON
DECIMALS: XX ± .02, XXX ± .010
ANGLES ± 0 30'
DRILLED HOLES
.040 TO .1285 +.002 -.001
.136 TO .228 +.003 -.001
.234 TO .500 +.004 -.001
.515 TO .750 +.005 -.001
.755 TO 1.000 +.007 .001
1.015 TO 2.000 +.010 -.001
SURFACE ROUGHNESS PER MIL STD-10

DRAWN
CHECK
APPD
APPD
FINISH
HEAT TREAT

CALIFORNIA COMPUTER PRODUCTS INC
305 MULLER ANAHEIM, CALIFORNIA

ASSEMBLY—
PLOTTER NETWORK NO2

SCALE NONE
SIZE E
10847-502-011
DO NOT SCALE THIS DRAWING
WEIGHT
SHEET 1 OF 1

SECTION 7
WIRE LISTS

JACK AND PIN LISTING

ELECTRONICS S/A-690 W/L 11610-203

CONTROL 201

10440-502 PLOTTER INPUT NETWORK

J001-	01	GRD	J001-L01	PXP
	02		L02	
	03	DXP-N	L03	DXP-P
	04	C1XP/	L04	
	05	C2XN/	L05	
	06	S700/	L06	
	07	4XNT*	L07	
	08		L08	
	09		L09	
	10		L10	PXN
	11	DXN-P	L11	
	12	DXN-N	L12	
	13		L13	
	14		L14	
	15		L15	PYP
	16	DYP-N	L16	DYP-P
	17		L17	
	18	SC1XP	L18	
	19		L19	
	20	SDS700	L20	PXP
	21	+18V	L21	SDS500
	22		L22	TR1
	23	+8V	L23	C1XP/
	24		L24	
	25	-8V	L25	
	26	PXN	L26	SC2XN
	27	SDS500	L27	C2XN/
	28	SDS700	L28	
	29	TR2	L29	SENT
	30		L30	
	31	SD	L31	ENT/
	32	SD/	L32	SSIM
	33	SOPR	L33	4XNT*
	34	SSIM	L34	SENT/
	35		L35	
	36		L36	SC3YP
	37	SDS700	L37	
	38	TR3	L38	PYP
	39		L39	SDS500
	40		L40	C3YP/
	41		L41	
	42		L42	
	43	GRD	L43	

10440-502 PLOTTER INPUT NETWORK

J002-			J002-L	
	01	GRD	01	PYN
	02		02	
	03	DYN-N	03	DYN-P
	04	C3YP/	04	
	05	C4YN/	05	
	06	S700/	06	
	07	4YNT*	07	
	08		08	
	09		09	
	10		10	PZP
	11	DZP-P	11	
	12	DZP-N	12	
	13		13	
	14		14	
	15		15	PZN
	16	DZN-N	16	DZN-P
	17		17	
	18	SC4YN	18	
	19		19	
	20	SDS700	20	PYN
	21	+18V	21	SDS500
	22	5C4YN/-1	22	TR4
	23	+8V	23	C4YN/
	24		24	
	25	-8V	25	
	26	PZP	26	SC5ZP
	27	SDS500	27	C5ZP/
	28	SDS700	28	
	29	TR5	29	STAT/
	30		30	
	31	S700	31	ENT/
	32	S700/	32	SSIM
	33	SDS700	33	4YNT*
	34	SDS500	34	
	35		35	
	36		36	SC6ZN
	37	SDS700	37	
	38	TR6	38	PZN
	39		39	SDS500
	40	GRD	40	C6ZN/
	41	SDS700	41	SSIM
	42	TMPL	42	
	43	GRD	43	TMPL/

10638-502 NAND-NOR GATE II

J003-			J003-L	
	01	GRD	01	
	02		02	
	03	C1XP/	03	
	04	C2XN/	04	C1XP
	05		05	C2XN
	06		06	
	07		07	
	08	C4YN/	08	
	09	C3YP/	09	C4YN
	10		10	C3YP
	11		11	
	12	C5ZP/	12	
	13	C6ZN/	13	
	14		14	C6ZN
	15		15	
	16	TMPL/	16	C5ZP
	17		17	DSAMPL
	18		18	
	19		19	
	20	PLOT	20	
	21	+18V	21	
	22		22	
	23	+8V	23	
	24		24	
	25	-8V	25	
	26	PRDY/	26	
	27		27	RUN
	28		28	PRDY
	29	PRDY/	29	
	30		30	
	31		31	
	32		32	
	33		33	
	34		34	
	35		35	
	36		36	
	37		37	
	38		38	
	39		39	
	40		40	
	41		41	
	42		42	
	43	GRD	43	

J004-	01	GRD	J004-L01	SZA
	02		L02	
	03	HCZ1	L03	
	04		L04	
	05	+24V	L05	
	06	XL3	L06	
	07		L07	
	08		L08	
	09		L09	
	10	XP3	L10	
	11	CZ1	L11	
	12	CZ1	L12	
	13		L13	
	14	XL2	L14	
	15		L15	
	16	XP2	L16	
	17	XL1	L17	
	18		L18	GRD
	19		L19	GRD
	20		L20	
	21	+18V	L21	
	22		L22	XP1
	23	+8V	L23	
	24		L24	
	25	-8V	L25	
	26		L26	
	27		L27	
	28		L28	
	29		L29	
	30		L30	
	31		L31	
	32		L32	
	33		L33	
	34		L34	
	35		L35	
	36		L36	
	37		L37	
	38		L38	
	39		L39	
	40		L40	
	41		L41	
	42		L42	
	43	GRD	L43	

J005-	01	GRD	J005-L01	
	02		L02	
	03		L03	
	04		L04	
	05	+24V	L05	
	06	YL3	L06	
	07		L07	
	08		L08	
	09		L09	
	10	YP3	L10	
	11		L11	
	12		L12	
	13		L13	
	14	YL2	L14	
	15		L15	
	16	YP2	L16	
	17	YL1	L17	
	18		L18	GRD
	19		L19	GRD
	20		L20	
	21	+18V	L21	
	22		L22	YP1
	23	+8V	L23	
	24		L24	
	25	-8V	L25	
	26	SLPY/	L26	
	27		L27	
	28		L28	
	29		L29	
	30		L30	
	31	SLNY/	L31	
	32		L32	
	33		L33	
	34		L34	
	35		L35	
	36		L36	
	37		L37	
	38	-8V	L38	
	39		L39	
	40		L40	
	41		L41	
	42		L42	
	43	GRD	L43	

10156-502-11 FLIP-FLOP/LOGIC (XL2, XL3)

J006-			J006-L	
	01	GRD	L01	1ZA
	02	XL2	L02	RUN
	03	XL2/	L03	PENB*
	04	1ZA-A	L04	0XL3-A
	05		L05	XL1
	06	XPP*	L06	SLNX/
	07	XL1/	L07	XPN*
	08	1XL2	L08	XL3/
	09	1XL2	L09	1XL2
	10	XL3	L10	0XL2
	11		L11	XL1
	12	2XL2	L12	XPP*
	13	0XL2	L13	0XL2-A
	14	0XL2-A	L14	0XL2-A
	15		L15	
	16	0XL2	L16	XL3/
	17	XL3	L17	XL2
	18	XPN*	L18	XPN*
	19		L19	0XL1
	20	1XL1	L20	XL2
	21	+18V	L21	0XL3
	22	3XL2	L22	C
	23	+8V	L23	XL2/
	24	0XL3-A	L24	XPN*
	25	-8V	L25	0XL1
	26	XL3	L26	XL2/
	27	3XL3	L27	XPP*
	28		L28	XL1
	29	0XL3-A	L29	XPN*
	30	XPP*	L30	0XL3
	31	1ZA-A	L31	C2XN
	32	C63P5-	L32	C1XP/
	33	2XL3	L33	S/00
	34	XL2/	L34	
	35	XL1/	L35	XPP*
	36	XPN*	L36	SLPX/
	37	1XL3	L37	1XL3
	38	0XL3	L38	1XL3
	39		L39	
	40	XL3/	L40	
	41	XL3	L41	1XL1
	42		L42	XL3/
	43	GRD	L43	XPP*

10160-502-11 FLIP-FLOP (ZA, XL1, YL1, ENT)

J007-			J007-L	
	01	GRD	L01	SPU
	02		L02	
	03		L03	CFFA
	04		L04	CFFA
	05		L05	ZA
	06		L06	SPD
	07		L07	
	08		L08	0ZA
	09		L09	1ZA
	10		L10	ZA/
	11		L11	2XL1
	12		L12	
	13		L13	CFFA
	14		L14	CFFA
	15		L15	XL1
	16		L16	3XL1
	17		L17	
	18		L18	0XL1
	19		L19	1XL1
	20		L20	XL1/
	21	+18V	L21	
	22	CFFA	L22	C
	23	+8V	L23	
	24		L24	
	25	-8V	L25	
	26		L26	CFFA
	27	2YL1	L27	CFFA
	28		L28	YL1
	29		L29	3YL1
	30		L30	
	31		L31	0YL1
	32		L32	1YL1
	33		L33	YL1/
	34		L34	
	35		L35	
	36		L36	CFFA
	37		L37	CFFA
	38		L38	ENT
	39		L39	
	40		L40	
	41		L41	0ENT
	42		L42	1ENT
	43	GRD	L43	ENT/

10156-502-11 FLIP-FLOP/LOGIC (YL2, YL3)

J008-			J008-L	
	01	GRD	L01	OZA
	02	YL2	L02	RUN
	03	YL2/	L03	PENB*
	04	OZA-A	L04	OYL3-A
	05		L05	YL1
	06	YPP*	L06	SLNY/
	07	YL1/	L07	YPN*
	08	1YL2	L08	YL3/
	09	1YL2	L09	1YL2
	10	YL3	L10	OYL2
	11		L11	YL1
	12	2YL2	L12	YPP*
	13	OYL2	L13	OYL2-A
	14	OYL2-A	L14	OYL2-A
	15		L15	
	16	OYL2	L16	YL3/
	17	YL3	L17	YL2
	18	YPN*	L18	YPN*
	19		L19	OYL1
	20	1YL1	L20	YL2
	21	+18V	L21	OYL3
	22	3YL2	L22	C
	23	+8V	L23	YL2/
	24	OYL3-A	L24	YPN*
	25	-8V	L25	OYL1
	26	YL3	L26	YL2/
	27	3YL3	L27	YPP*
	28		L28	YL1
	29	OYL3-A	L29	YPN*
	30	YPP*	L30	OYL3
	31	OZA-A	L31	C2XN/
	32	C63P5-	L32	C1XP
	33	2YL3	L33	S700
	34	YL2/	L34	
	35	YL1/	L35	YPP*
	36	YPN*	L36	SLPY/
	37	1YL3	L37	1YL3
	38	OYL3	L38	1YL3
	39		L39	
	40	YL3/	L40	
	41	YL3	L41	1YL1
	42		L42	YL3/
	43	GRD	L43	YPP*

10847-502-11 PLOTTER NETWORK NO. 2

J009-			J009-L	
	01	GRD	L01	
	02	RUN	L02	5C4YN/-1
	03		L03	
	04		L04	TSC/
	05		L05	
	06	CFS	L06	SXP
	07		L07	SMX/
	08		L08	SXN
	09	GRD	L09	SYP
	10		L10	SMY/
	11		L11	SYN
	12	+18V	L12	
	13		L13	
	14		L14	
	15	PRS	L15	
	16		L16	
	17		L17	
	18		L18	3XL1
	19		L19	2XL2
	20		L20	2XL3
	21	+18V	L21	3YL1
	22		L22	
	23	+8V	L23	2YL2
	24		L24	2YL3
	25	-8V	L25	RSP
	26		L26	
	27		L27	
	28		L28	
	29		L29	
	30		L30	
	31		L31	
	32		L32	
	33		L33	
	34		L34	DSAMPL
	35		L35	
	36		L36	
	37		L37	
	38		L38	
	39		L39	
	40		L40	
	41		L41	
	42		L42	
	43	GRD	L43	

10172-502-11 CLOCK GENERATOR

J010-		J010-L01	
01	GRD		
02		L02	
03		L03	STAT/
04		L04	
05	GRD	L05	SMX/
06	GRD	L06	SMY/
07		L07	
08	S700	L08	5TSC/-1
09	C4YN/	L09	
10		L10	TSC/
11	GRD	L11	GRD
12		L12	
13		L13	
14		L14	
15	GRD	L15	
16	SFAS	L16	
17		L17	
18	SSLO	L18	CFS
19		L19	
20	+18V	L20	
21	+18V	L21	
22		L22	
23	+8V	L23	SSC
24		L24	
25	-8V	L25	
26		L26	
27		L27	
28		L28	PCLK
29		L29	S18V
30		L30	
31		L31	
32		L32	
33		L33	
34		L34	
35		L35	
36	TSC	L36	TC
37		L37	
38	PCLK	L38	
39		L39	
40		L40	+8V
41		L41	C
42		L42	
43	GRD	L43	

10164-502-11 LOGIC DRIVER/INVERTER

J011-		J011-L01	C6ZN
01	GRD	L02	4CXP*
02	4CXP*	L03	C5ZP
03	4CXP*	L04	C3YP/
04	C5ZP/	L05	C2XN
05	CXP*	L06	C1XP/
06	CXN*	L07	4CXN*
07	4CXN*	L08	
08	4XPP*	L09	
09	4CXP*-3	L10	4CXP*
10	4CXN*-3	L11	C3YP
11	C5ZP/	L12	C2XN
12	XPP*	L13	4CXN*
13		L14	4CXN*
14	C5ZP/	L15	C1XP
15	C3YP/	L16	C5ZP
16	C1XP	L17	C6ZN
17		L18	4CXP*-3
18		L19	C5ZP
19		L20	C3YP/
20	C6ZN/	L21	C5ZP/
21	+18V	L22	C3YP
22	4CXN*-3	L23	C1XP
23	+8V	L24	C63P5-
24		L25	
25	-8V	L26	SXMXP
26	5TSC/-1	L27	
27	SSIM	L28	4XPP*
28	ENT	L29	4XPP*
29		L30	
30		L31	SXP
31		L32	
32		L33	
33	GRD	L34	
34	4XPN*	L35	XM3/
35	XPN*	L36	XM1/
36	1TDX-1	L37	
37		L38	SXMXN
38		L39	4XPN*
39	4PENB*	L40	4XPN*
40	PENB*	L41	
41	XNT*	L42	SXN
42	4XNT*	L43	
43	GRD		

10128-502 ONE-SHOT MULTIVIBRATOR (TDX, TDY, TMV)

J012-	01	GRD	J012-L01	CSSA
	02		L02	3TDX
	03		L03	1TDX-1
	04		L04	
	05	TDX/	L05	JCTDX
	06		L06	
	07	TDX	L07	JTDX
	08	JCTDX	L08	STDXF
	09		L09	
	10		L10	
	11		L11	
	12	1TDX-1	L12	
	13		L13	
	14		L14	
	15	3TDY	L15	C
	16		L16	
	17		L17	
	18		L18	
	19		L19	JTDX
	20	CSSA	L20	JTDY
	21	+18V	L21	JTDX
	22		L22	JTDY
	23	+8V	L23	STDYF
	24	CSSA	L24	TDY/
	25	-8V	L25	
	26		L26	
	27	JCTDY	L27	
	28	1TDY-1	L28	1TDY-1
	29		L29	
	30	JTMV	L30	JTDY
	31		L31	
	32		L32	
	33		L33	JTMV
	34		L34	
	35		L35	TMV
	36	TDY	L36	3TMV
	37	JCTDY	L37	
	38		L38	
	39		L39	
	40		L40	TMV/
	41	TSC/	L41	
	42	TC	L42	
	43	GRD	L43	1TMV

10164-502-11 LOGIC DRIVER/INVERTER

J013-	01	GRD	J013-L01	C6ZN
	02	4CYP*	L02	4CYP*
	03	4CYP*	L03	C5ZP
	04	C5ZP/	L04	C2XN/
	05	CYP*	L05	C3YP/
	06	CYN*	L06	C3YP/
	07	4CYN*	L07	4CYN*
	08	4YPP*	L08	C1XP
	09	4CYP*-3	L09	C1XP
	10	4CYN*-3	L10	4CYP*
	11	C5ZP/	L11	C3YP
	12	YPP*	L12	C2XN/
	13	5LFF	L13	4CYN*
	14	C5ZP/	L14	4CYN*
	15	C3YP	L15	C3YP
	16	C2XN	L16	C5ZP
	17	LFF	L17	C6ZN
	18		L18	4CYP*-3
	19		L19	PRDY/
	20	4PLIM*	L20	
	21	+18V	L21	C5ZP/
	22	4CYN*-3	L22	C3YP/
	23	+8V	L23	C2XN
	24		L24	
	25	-8V	L25	
	26	SLPX/	L26	SYMYP
	27	SLNX/	L27	
	28	SLPY/	L28	4YPP*
	29		L29	4YPP*
	30	5TSC-1	L30	
	31	4PLIM*-1	L31	SYP
	32	TSC	L32	
	33	GRD	L33	SLNY/
	34	4YPN*	L34	4PLIM*
	35	YPN*	L35	YM3/
	36	1TDY-1	L36	YM1/
	37		L37	4PLIM*-1
	38		L38	SYMYN
	39	4PLIM*	L39	4YPN*
	40	PLIM*	L40	4YPN*
	41	YNT*	L41	
	42	4YNT*	L42	SYN
	43	GRD	L43	

10156-502-11 FLIP-FLOP/LOGIC (YM3, XD)

J014-	01	GRD	J014-L01	SD
	02	XM3	L02	PENB*
	03	XM3/	L03	1XD
	04	1XD-A	L04	
	05		L05	1XM3
	06	C1XP	L06	C6ZN
	07	S700/	L07	C5ZP/
	08	0XM3-A	L08	C1XP
	09	1XM3	L09	0XD-A
	10	XM2	L10	XTMV-
	11	XM1/	L11	0XM3
	12	2XM3	L12	XM1/
	13	0XM3	L13	PENB*
	14	0XM3-A	L14	0XM3
	15		L15	XTMV-
	16	0XM3-A	L16	C6ZN/
	17	CXP*	L17	C5ZP/
	18	S700	L18	C2XN
	19		L19	1XD-A
	20	0XD-A	L20	PENB*
	21	+18V	L21	S700
	22	3XM3	L22	C
	23	+8V	L23	C6ZN
	24	0XD-A	L24	C2XN
	25	-8V	L25	C6ZN/
	26	1XD-A	L26	C5ZP/
	27	3XD	L27	C1XP
	28		L28	1ENT
	29	SD/	L29	SENT
	30	0XD	L30	SSIM
	31	0XM3	L31	XM1
	32	XNT*	L32	XD
	33	2XD	L33	TDX/
	34	1XD-A	L34	
	35	0ENT	L35	C6ZN
	36	SENT/	L36	C5ZP
	37	1XD	L37	C2XN/
	38	0XD	L38	
	39		L39	0XD
	40	XD/	L40	
	41	XD	L41	1XD
	42	0XD-A	L42	SD
	43	GRD	L43	S700/

10156-502-11 FLIP-FLOP/LOGIC (XM1, XM2)

J015-	01	GRD	J015-L01	XM3
	02	XM1	L02	XTMV-
	03	XM1/	L03	1XM2
	04	1XM2-A	L04	XM3/
	05		L05	1XM1
	06	1ZA-A	L06	XNT*
	07	C5ZP	L07	XD/
	08	S700/	L08	XM2/
	09	1XM1	L09	0XM1
	10	SMX/	L10	XM2/
	11	RUN	L11	XM3/
	12	2XM1	L12	XM3/
	13	0XM1	L13	0XM1
	14	XMXP-	L14	
	15	XMXP-	L15	
	16	0ZA-A	L16	
	17	C6ZN	L17	PLOT
	18	S700/	L18	
	19		L19	1TMV
	20	5LFF	L20	RUN
	21	+18V	L21	SMX/
	22	3XM1	L22	C
	23	+8V	L23	RFF
	24	XMXN-	L24	
	25	-8V	L25	C2XN
	26	1XM2-A	L26	
	27	3XM2	L27	S700/
	28	XMXN-	L28	XM2
	29	XM3/	L29	XM3/
	30	0XM2-A	L30	
	31	S700	L31	4XNT*
	32		L32	ENT/
	33	2XM2	L33	TMV/
	34	1XM2-A	L34	
	35		L35	CXN*
	36		L36	
	37	1XM2	L37	S700
	38	0XM2	L38	
	39		L39	0XM2
	40	XM2/	L40	XM1
	41	XM2	L41	XD/
	42	0XM2-A	L42	0XM2-A
	43	GRD	L43	XNT*

10156-502-11 FLIP-FLOP/LOGIC (YM1, YM2)

J016-			J016-L	
	01	GRD	L01	YM3
	02	YM1	L02	YTMV-
	03	YM1/	L03	1YM2
	04	1YM2-A	L04	YM3/
	05		L05	1YM1
	06	4PENB*	L06	YNT*
	07	SOPR	L07	YD/
	08	S700/	L08	YM2/
	09	1YM1	L09	0YM1
	10	SMY/	L10	YM2/
	11	RUN	L11	YM3/
	12	2YM1	L12	YM3/
	13	0YM1	L13	0YM1
	14	YMYP-	L14	
	15	YMYP-	L15	
	16	4PENB*	L16	
	17	ENT	L17	
	18	S700/	L18	
	19		L19	
	20	4PENB*	L20	RUN
	21	+18V	L21	SMY/
	22	3YM1	L22	C
	23	+8V	L23	TMV
	24	YMYN-	L24	S700
	25	-8V	L25	C4YN
	26	1YM2-A	L26	
	27	3YM2	L27	S700/
	28	YMYN-	L28	YM2
	29	YM3/	L29	YM3/
	30	0YM2-A	L30	
	31	S700	L31	4YNT*
	32		L32	ENT/
	33	2YM2	L33	TMV/
	34	1YM2-A	L34	
	35	TSC/	L35	CYN*
	36		L36	
	37	1YM2	L37	S700
	38	0YM2	L38	
	39	5TSC-1	L39	0YM2
	40	YM2/	L40	YM1
	41	YM2	L41	YD/
	42	0YM2-A	L42	0YM2-A
	43	GRD	L43	YNT*

10156-502-11 FLIP-FLOP/LOGIC (YM3, YD)

J017-			J017-L	
	01	GRD	L01	SD
	02	YM3	L02	PENB*
	03	YM3/	L03	1YD
	04	1YD-A	L04	
	05		L05	1YM3
	06	C3YP	L06	C6ZN
	07	S700/	L07	C5ZP/
	08	0YM3-A	L08	C1XP
	09	1YM3	L09	0YD-A
	10	YM2	L10	YTMV-
	11	YM1/	L11	0YM3
	12	2YM3	L12	YM1/
	13	0YM3	L13	PENB*
	14	0YM3-A	L14	0YM3
	15		L15	YTMV-
	16	0YM3-A	L16	C6ZN/
	17	CYP*	L17	C5ZP/
	18	S700	L18	C2XN/
	19		L19	1YD-A
	20	0YD-A	L20	PENB*
	21	+18V	L21	S700
	22	3YM3	L22	C
	23	+8V	L23	C6ZN
	24	0YD-A	L24	C2XN/
	25	-8V	L25	C6ZN/
	26	1YD-A	L26	C5ZP/
	27	3YD	L27	C1XP
	28		L28	
	29	SD/	L29	
	30	0YD	L30	
	31	0YM3	L31	YM1
	32	YNT*	L32	YD
	33	2YD	L33	TDY/
	34	1YD-A	L34	
	35		L35	C6ZN
	36		L36	C5ZP
	37	1YD	L37	C2XN
	38	0YD	L38	
	39		L39	0YD
	40	YD/	L40	
	41	YD	L41	1YD
	42	0YD-A	L42	SD
	43	GRD	L43	S700/

J401, J402, J403, J404

J401-01	+8V	J403-01	AC-3
02	RUN	02	ACOM
03	+18V	03	GRD CH
04	SPD	04	+24V-X
05	SPU	05	CX1
06	SXP	06	CX2
07	SMX/	07	CX3
08	SXN	08	XDC
09	SFAS	09	XP1
10	SYP	10	XP2
11	SMY/	11	XP3
12	SYN	14	CY1
13	SSLO	15	CY2
14	SLNY/	16	CY3
15	SLPY/	17	YDC
17	SPL1	18	YP1
19	GRD	19	YP2
J402-01	KAC	20	YP3
02	AC-2	23	+24V-Y
03	AC-3	J404-01	KAC
04	ACOM	02	AC-2
05	GRD CH	03	AC-3
06	+24V	04	ACOM
07	GRD-24RX	05	GRD CH
08	CX1	06	GRD-24RX
09	CX2	07	GRD-24RY
10	CX3	08	+18V
11	CY1	09	+8V
12	CY2	10	-8V
13	CY3	11	GRD
14	CZ1	13	+24V-X
15	GRD-24RY	14	+24V
17	HCZ1	15	+24V-Y.

J405, J406

J405-01	TR1	J406-01	DXN-P
02	TR2	02	DXP-P
03	TR3	03	DYP-P
04	TR4	04	DYN-P
07	TR5	05	DXN-N
08	TR6	06	DXP-N
09	GRD CH	07	DYP-N
10	GRD CH	08	DYN-N
11	GRD	09	DZN-P
14	TMPL	10	DZP-P
16	PRS	11	DZN-N
17	PLIM*	12	DZP-N
18	SPL1	13	GRD
19	PRDY	14	GRD CH
		15	GRD
		16	PRS

RESISTORS AND SWITCHES

R001-	01	STDX
	02	STDXF
	03	STDXF
R002-	01	STDY
	02	STDYF
	03	STDYF
R003-	A	GRD-24RX
	B	XDC
	C	GRD-24RX
R004-	A	GRD-24RY
	B	YDC
	C	GRD-24RY
S001-	01	S700/
	02	GRD
	03	S700
	04	SDS500
	05	GRD
	06	SDS700
S002-	01	GRD
	02	SC6ZN
	03	SSIM
S003-	01	GRD
	02	SC5ZP
	03	SSIM
S004-	01	GRD
	02	SC4YN
	03	SSIM
S005-	01	GRD
	02	SC3YP
	03	SSIM
S006-	01	GRD
	02	SC2XN
	03	SSIM
S007-	01	GRD
	02	SC1XP
	03	SSIM
S008-	02	SSLO
	03	SSLOR
	04	STDXF
	05	STDX
	06	STDXR
	07	STDYF
	08	STDY
	09	STDYR
S009-	01	+8V
	02	+8V
	03	SENT
	04	SENT/
S010-	01	SSIM
	02	GRD
	03	SOPR
	05	SDS700
	06	SDS500
S011-	01	S18V
	03	SSC
S012-	02	+18V
	03	S18V
	04	STAT/
	05	+8V
	06	S8V
S013-	01	SJXP
	02	XMXP-
	03	SJYP
	04	SJXN
	05	XMXN-
	06	SJYN
	07	SJYP
	08	YMYP-
	09	SJXP
	10	SJYN
	11	YMYN-
	12	SJXN

SWITCHES

S014-	01	S8V
	03	3TDX
S015-	01	S8V
	03	SRV
S016-	01	LFF
	02	S8V
	04	+18V
	05	SSV
S017-	01	SJXP
	02	SXMXP
	03	SJXN
	04	SJXN
	05	SXMXN
	06	SJXP
S018-	01	S8V
	03	3TDY
S019-	01	S8V
	03	3TMV
S020-	01	SJYP
	02	SYMYP
	03	SJYN
	04	SJYN
	05	SYMYN
	06	SJYP

S021-	A01	XD
	A02	XL1
	A03	XL2
	A04	XL3
	A05	XM1
	A06	XM2
	A07	XM3
	A08	YD
	A09	YL1
	A10	YL2
	A11	YL3
	A12	YM1
	A13	YM2
	A14	YM3
	A15	ZA
	A16	TDX
	A17	TDY
	A18	TMV
	ACOM	FF
	B01	3XD
	B02	3XL1
	B03	3XL2
	B04	3XL3
	B05	3XM1
	B06	3XM2
	B07	3XM3
	B08	3YD
	B09	3YL1
	B10	3YL2
	B11	3YL3
	B12	3YM1
	B13	3YM2
	B14	3YM3
	B15	SPD
	BCOM	SSV

SWITCHES, TEST POINTS, TERMINAL STRIPS

S021-C01	2XD
C02	2XL1
C03	2XL2
C04	2XL3
C05	2XM1
C06	2XM2
C07	2XM3
C08	2YD
C09	2YL1
C10	2YL2
C11	2YL3
C12	2YM1
C13	2YM2
C14	2YM3
C15	SPU
CCOM	SRV
D01	SSLO
D03	SSLOR
D05	STDXR
D07	+8V
D09	+8V
D11	STDYR
D13	LFF
D15	GRD
D16	FF
D18	RFF
S022- 01	ZA
02	SZA
03	ZA/
04	SPU
05	RSP
06	SPD
S401- 01	SD/
02	GRD
03	SD

TP01	TC
TP02	C
TP03	RFF
TP04	GRD
TS01-A01	AC-3
A02	ACOM
A03	+24V
A04	+18V
A05	+8V
A06	-8V
A07	GRD
A08	GRD
B01	AC-3
B02	ACOM
B03	+24V
B04	+18V
B05	+8V
B06	-8V
B07	GRD
B08	GRD
TS02-A01	GRD-24RX
A02	GRD-24RY
A03	GRD CH
A04	GRD CH
A05	GRD CH
A07	XDC
A08	YDC
B01	GRD-24RX
B02	GRD-24RY
B03	GRD CH
B04	GRD CH
B05	GRD CH
B07	XDC
B08	YDC

TERM LISTING

ELECTRONICS S/A-690 W/L 11610-203

CONTROL 201

REVISION PAGE

REVISION	DATE	EFFECTIVITY	APPLICABLE ENGINEERING ORDERS	
NC	05 01 68			
A	10 01 66	ALL PARTS		AE 000010
B	07 25 67	ALL PARTS		BE 000020
C	01 02 68	NEXT PARTS- RECORD CHANGE		CE 000030
D	01 08 68	NEXT PARTS- RECORD CHANGE		DE 000040
E	07 09 68	NEXT PARTS- RECORD CHANGE		EE 000050
E	11 19 68	NEXT PARTS MADE, ALL PARTS FOR IBM 1130		EE 000060
F	10 28 68	TERMIPOINT		FE 000070

THE FOLLOWING WIRE CHANGES ARE INCLUDED IN THIS LISTING

	REV	WIRE	C	S	T	LNGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG
DEL	B	004610	0	16	30			J403-08	TS02-A01	GRD-24RX			
ADD	B	004622	0	16	30			R003- A	TS02-B01	GRD-24RX			
ADD	B	004624	0	16	30			R003- A	R003- C	GRD-24RX			
DEL	B	004640	0	16	30			J403-17	TS02-A02	GRD-24RY			
ADD	B	004652	0	16	30			R004- A	TS02-B02	GRD-24RY			
ADD	B	004654	0	16	30			R004- A	R004- C	GRD-24RY			
ADD	B	006655						J009-L04	J010-L10	TSC/			
ADD	B	006702	9	16	30			J403-08	TS02-A07	XDC			
ADD	B	006704	9	16	30			R003- B	TS02-B07	XDC			
ADD	B	007322	9	16	30			J403-17	TS02-A08	YDC			
ADD	B	007324	9	16	30			R004- B	TS02-B08	YDC			
DEL	D	002400	6	18	30			J402-02	J404- 02	AC-2			
ADD	D	002400	6	18	30			J402-02	J404-02	AC-2			
ADD	E	004824	9	22	30			J405-16	J406-16	PRS			
ADD	E	004826	9	22	30		22	J405-16	J009- 15	PRS			
DEL	E	004950					26	J008-L02	J015- 11	RUN			
ADD	E	004950					26	J008-L02	J009- 02	RUN			
ADD	E	004955					26	J009- 02	J015- 11	RUN			

GENERAL NOTES PAGE

THIS WIRE LIST IS CALLED OUT ON ASSY NOS.
11620-203 AND 11785-203

UNLESS OTHERWISE NOTED, ALL WIRES ARE 9-26-30

ROUTE WIRES FROM CONNECTOR PANEL AND TEST PANEL AREA BY
PIN 43 SIDE OF PCB CONNECTORS

NOTE 1. USE CINCH JONES JUMPER 141J OR EQUIVALENT

NOTE 2. -CHASSIS- IS GRD LUG IN CONNECTOR PANEL AREA (SEE ITEM
NO. 29 IN DWG 11610-203)

N 000010
N 000020
N 000030
N 000040
N 000050
N 000060
N 000070
N 000080
N 000090
N 000100
N 000110
N 000120

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000010	9	16	30			J402-06	TS01-A03	+24V				
000020	9	16	30			J404-14	TS01-A03	+24V				
000030	9	22	30		22	TS01-B03	J004- 05	+24V				
000040	9	22	30		22 22	J004- 05	J005- 05	+24V				
000050	9	16	30			J403-04	J404-13	+24V-X				
000060	9	16	30			J403-23	J404-15	+24V-Y				
000070	9	16	30			J401-03	TS01-A04	+18V				
000080	9	16	30			J404-08	TS01-A04	+18V				
000090	9	22	30		22	TS01-B04	J001- 21	+18V				
000100	9	22	30		22 22	J001- 21	J002- 21	+18V				
000110	9	22	30		22 22	J002- 21	J003- 21	+18V				
000120	9	22	30		22 22	J003- 21	J004- 21	+18V				
000130	9	22	30		22 22	J004- 21	J005- 21	+18V				
000140	9	22	30		22 22	J005- 21	J006- 21	+18V				
000150	9	22	30		22 22	J006- 21	J007- 21	+18V				
000160	9	22	30		22 22	J007- 21	J008- 21	+18V				
000170	9	22	30		22 22	J008- 21	J009- 21	+18V				
000180	9	22	30		22 22	J009- 21	J010- 20	+18V				
000190	9	22	30		22 22	J010- 20	J010- 21	+18V				
000200	9	22	30		22 22	J010- 21	J011- 21	+18V				
000210	9	22	30		22 22	J011- 21	J012- 21	+18V				
000220	9	22	30		22 22	J012- 21	J013- 21	+18V				
000230	9	22	30		22 22	J013- 21	J014- 21	+18V				
000240	9	22	30		22 22	J014- 21	J015- 21	+18V				
000250	9	22	30		22 22	J015- 21	J016- 21	+18V				
000260	9	22	30		22 22	J016- 21	J017- 21	+18V				
000270	9	22	30		22	TS01-B04	J017- 21	+18V				
000280	9	22	30		22 22	J009- 12	J009- 21	+18V				
000290	9	22	30		22	S012- 02	J016- 21	+18V				
000300	9	22	30		22	S016- 04	J017- 21	+18V				
000310	9	16	30			J401-01	TS01-A05	+8V				
000320	9	16	30			J404-09	TS01-A05	+8V				
000330	9	22	30		22	TS01-B05	J001- 23	+8V				
000340	9	22	30		22 22	J001- 23	J002- 23	+8V				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000350	9	22	30		22 22	J002- 23	J003- 23	+8V				
000360	9	22	30		22 22	J003- 23	J004- 23	+8V				
000370	9	22	30		22 22	J004- 23	J005- 23	+8V				
000380	9	22	30		22 22	J005- 23	J006- 23	+8V				
000390	9	22	30		22 22	J006- 23	J007- 23	+8V				
000400	9	22	30		22 22	J007- 23	J008- 23	+8V				
000410	9	22	30		22 22	J008- 23	J009- 23	+8V				
000420	9	22	30		22 22	J009- 23	J010- 23	+8V				
000430	9	22	30		22 22	J010- 23	J011- 23	+8V				
000440	9	22	30		22 22	J011- 23	J012- 23	+8V				
000450	9	22	30		22 22	J012- 23	J013- 23	+8V				
000460	9	22	30		22 22	J013- 23	J014- 23	+8V				
000470	9	22	30		22 22	J014- 23	J015- 23	+8V				
000480	9	22	30		22 22	J015- 23	J016- 23	+8V				
000490	9	22	30		22 22	J016- 23	J017- 23	+8V				
000500	9	22	30		22	TS01-B05	J017- 23	+8V				
000510	9	22	30		22 22	J010- 23	J010-L40	+8V				
000520	9	22	30		22	S021-D07	J017- 23	+8V				
000530		24	10			S021-D07	S021-D09	+8V				
000540	9	22	30			S021-D09	S009- 01	+8V				
000550		24	10			S009- 01	S009- 02	+8V				
000560	9	22	30			S009- 02	S012- 05	+8V				
000570	9	16	30			J404-10	TS01-A06	-8V				
000580	9	22	30		22	TS01-B06	J001- 25	-8V				
000590	9	22	30		22 22	J001- 25	J002- 25	-8V				
000600	9	22	30		22 22	J002- 25	J003- 25	-8V				
000610	9	22	30		22 22	J003- 25	J004- 25	-8V				
000620	9	22	30		22 22	J004- 25	J005- 25	-8V				
000630	9	22	30		22 22	J005- 25	J006- 25	-8V				
000640	9	22	30		22 22	J006- 25	J007- 25	-8V				
000650	9	22	30		22 22	J007- 25	J008- 25	-8V				
000660	9	22	30		22 22	J008- 25	J009- 25	-8V				
000670	9	22	30		22 22	J009- 25	J010- 25	-8V				
000680	9	22	30		22 22	J010- 25	J011- 25	-8V				
000690	9	22	30		22 22	J011- 25	J012- 25	-8V				
000700	9	22	30		22 22	J012- 25	J013- 25	-8V				
000710	9	22	30		22 22	J013- 25	J014- 25	-8V				
000720	9	22	30		22 22	J014- 25	J015- 25	-8V				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000730	9	22	30		22 22	J015- 25	J016- 25	-8V				
000740	9	22	30		22 22	J016- 25	J017- 25	-8V				
000750	9	22	30		22	TS01-B06	J017- 25	-8V				
000760	9	22	30		22 22	J005- 25	J005- 38	-8V				
000770					26 26	J007-L41	J014- 35	OENT				
000780					26 26	J014- 30	J014- 38	OXD				
000790					26 26	J014- 38	J014-L39	OXD				
000800					26 26	J014- 20	J014-L09	OXD-A				
000810					26 26	J014- 20	J014- 24	OXD-A				
000820					26 26	J014- 24	J014- 42	OXD-A				
000830					26 26	J006-L19	J006-L25	OXL1				
000840					26 26	J006-L19	J007-L18	OXL1				
000850					26 26	J006- 13	J006-L10	OXL2				
000860					26 26	J006- 13	J006- 16	OXL2				
000870					26 26	J006- 14	J006-L14	OXL2-A				
000880					26 26	J006-L13	J006-L14	OXL2-A				
000890					26 26	J006-L21	J006-L30	OXL3				
000900					26 26	J006- 38	J006-L30	OXL3				
000910					26 26	J006- 24	J006-L04	OXL3-A				
000920					26 26	J006- 24	J006- 29	OXL3-A				
000930					26 26	J015- 13	J015-L13	OXM1				
000940					26 26	J015-L09	J015-L13	OXM1				
000950					26 26	J015- 38	J015-L39	OXM2				
000960					26 26	J015- 30	J015- 42	OXM2-A				
000970					26 26	J015- 42	J015-L42	OXM2-A				
000980					26 26	J014-L11	J014-L14	OXM3				
000990					26 26	J014- 13	J014-L14	OXM3				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
001000					26 26	J014- 13	J014- 31	0XM3				
001010					26 26	J014- 08	J014- 14	0XM3-A				
001020					26 26	J014- 14	J014- 16	0XM3-A				
001030					26 26	J017- 30	J017- 38	0YD				
001040					26 26	J017- 38	J017-L39	0YD				
001050					26 26	J017- 20	J017-L09	0YD-A				
001060					26 26	J017- 20	J017- 24	0YD-A				
001070					26 26	J017- 24	J017- 42	0YD-A				
001080					26 26	J007-L31	J008-L25	0YL1				
001090					26 26	J008-L19	J008-L25	0YL1				
001100					26 26	J008- 13	J008-L10	0YL2				
001110					26 26	J008- 13	J008- 16	0YL2				
001120					26 26	J008- 14	J008-L14	0YL2-A				
001130					26 26	J008-L13	J008-L14	0YL2-A				
001140					26 26	J008-L21	J008-L30	0YL3				
001150					26 26	J008- 38	J008-L30	0YL3				
001160					26 26	J008- 24	J008-L04	0YL3-A				
001170					26 26	J008- 24	J008- 29	0YL3-A				
001180					26 26	J016- 13	J016-L13	0YM1				
001190					26 26	J016-L09	J016-L13	0YM1				
001200					26 26	J016- 38	J016-L39	0YM2				
001210					26 26	J016- 30	J016- 42	0YM2-A				
001220					26 26	J016- 42	J016-L42	0YM2-A				
001230					26 26	J017-L11	J017-L14	0YM3				
001240					26 26	J017- 13	J017-L14	0YM3				
001250					26 26	J017- 13	J017- 31	0YM3				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
001260					26 26	J017- 08	J017- 14	0YM3-A				
001270					26 26	J017- 14	J017- 16	0YM3-A				
001280					26 26	J007-L08	J008-L01	0ZA				
001290					26 26	J008- 04	J008- 31	0ZA-A				
001300					26 26	J008- 31	J015- 16	0ZA-A				
001310					26 26	J007-L42	J014-L28	1ENT				
001320					26 26	J011- 36	J012- 12	1TDX-1				
001330					26 26	J012- 12	J012-L03	1TDX-1				
001340					26 26	J012- 28	J012-L28	1TDY-1				
001350					26 26	J012- 28	J013- 36	1TDY-1				
001360					26 26	J012-L43	J015-L19	1TMV				
001370					26 26	J014- 37	J014-L03	1XD				
001380					26 26	J014- 37	J014-L41	1XD				
001390					26 26	J014- 04	J014-L19	1XD-A				
001400					26 26	J014- 26	J014-L19	1XD-A				
001410					26 26	J014- 26	J014- 34	1XD-A				
001420					26 26	J006- 20	J006-L41	1XL1				
001430					26 26	J006-L41	J007-L19	1XL1				
001440					26 26	J006- 08	J006- 09	1XL2				
001450					26 26	J006- 09	J006-L09	1XL2				
001460					26 26	J006- 37	J006-L37	1XL3				
001470					26 26	J006-L37	J006-L38	1XL3				
001480					26 26	J015- 09	J015-L05	1XM1				
001490					26 26	J015- 37	J015-L03	1XM2				
001500					26 26	J015- 04	J015- 26	1XM2-A				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
001510					26 26	J015- 26	J015- 34	1XM2-A				
001520					26 26	J014- 09	J014-L05	1XM3				
001530					26 26	J017- 37	J017-L03	1YD				
001540					26 26	J017- 37	J017-L41	1YD				
001550					26 26	J017- 04	J017-L19	1YD-A				
001560					26 26	J017- 26	J017-L19	1YD-A				
001570					26 26	J017- 26	J017- 34	1YD-A				
001580					26 26	J007-L32	J008- 20	1YL1				
001590					26 26	J008- 20	J008-L41	1YL1				
001600					26 26	J008- 08	J008- 09	1YL2				
001610					26 26	J008- 09	J008-L09	1YL2				
001620					26 26	J008- 37	J008-L37	1YL3				
001630					26 26	J008-L37	J008-L38	1YL3				
001640					26 26	J016- 09	J016-L05	1YM1				
001650					26 26	J016- 37	J016-L03	1YM2				
001660					26 26	J016- 04	J016- 26	1YM2-A				
001670					26 26	J016- 26	J016- 34	1YM2-A				
001680					26 26	J017- 09	J017-L05	1YM3				
001690					26 26	J006-L01	J007-L09	1ZA				
001700					26 26	J006- 04	J006- 31	1ZA-A				
001710					26 26	J006- 04	J015- 06	1ZA-A				
001720					26	S021-C01	J014- 33	2XD				
001730					26	S021-C02	J007-L11	2XL1				
001740					26 26	J006- 12	J009-L19	2XL2				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
001750					26	S021-C03	J009-L19	2XL2				
001760					26 26	J006- 33	J009-L20	2XL3				
001770					26	S021-C04	J009-L20	2XL3				
001780					26	S021-C05	J015- 12	2XM1				
001790					26	S021-C06	J015- 33	2XM2				
001800					26	S021-C07	J014- 12	2XM3				
001810					26	S021-C08	J017- 33	2YD				
001820					26	S021-C09	J007- 27	2YL1				
001830					26 26	J008- 12	J009-L23	2YL2				
001840					26	S021-C10	J009-L23	2YL2				
001850					26 26	J008- 33	J009-L24	2YL3				
001860					26	S021-C11	J009-L24	2YL3				
001870					26	S021-C12	J016- 12	2YM1				
001880					26	S021-C13	J016- 33	2YM2				
001890					26	S021-C14	J017- 12	2YM3				
001900					26	S014- 03	J012-L02	3TDX				
001910					26	S018- 03	J012- 15	3TDY				
001920					26	S019- 03	J012-L36	3TMV				
001930					26	S021-B01	J014- 27	3XD				
001940					26 26	J007-L16	J009-L18	3XL1				
001950					26	S021-B02	J009-L18	3XL1				
001960					26	S021-B03	J006- 22	3XL2				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
001970					26	S021-R04	J006- 27	3XL3				
001980					26	S021-R05	J015- 22	3XM1				
001990					26	S021-R06	J015- 27	3XM2				
002000					26	S021-R07	J014- 22	3XM3				
002010					26	S021-R08	J017- 27	3YD				
002020					26 26	J007-L29	J009-L21	3YL1				
002030					26	S021-R09	J009-L21	3YL1				
002040					26	S021-R10	J008- 22	3YL2				
002050					26	S021-R11	J008- 27	3YL3				
002060					26	S021-R12	J016- 22	3YM1				
002070					26	S021-R13	J016- 27	3YM2				
002080					26	S021-R14	J017- 22	3YM3				
002090					26 26	J011- 07	J011-L07	4CXN*				
002100					26 26	J011-L07	J011-L13	4CXN*				
002110					26 26	J011-L13	J011-L14	4CXN*				
002120					26 26	J011- 10	J011- 22	4CXN*-3				
002130					26 26	J011- 02	J011- 03	4CXP*				
002140					26 26	J011- 02	J011-L02	4CXP*				
002150					26 26	J011-L02	J011-L10	4CXP*				
002160					26 26	J011- 09	J011-L18	4CXP*-3				
002170					26 26	J013- 07	J013-L07	4CYN*				
002180					26 26	J013-L07	J013-L13	4CYN*				
002190					26 26	J013-L13	J013-L14	4CYN*				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
002200					26 26	J013- 10	J013- 22	4CYN*-3				
002210					26 26	J013- 02	J013- 03	4CYP*				
002220					26 26	J013- 02	J013-L02	4CYP*				
002230					26 26	J013-L02	J013-L10	4CYP*				
002240					26 26	J013- 09	J013-L18	4CYP*-3				
002242					26 26	J011- 39	J016- 20	4PENB*				
002244					26 26	J016- 16	J016- 20	4PENB*				
002246					26 26	J016- 06	J016- 16	4PENB*				
002250					26 26	J013- 20	J013-L34	4PLIM*				
002260					26 26	J013- 39	J013-L34	4PLIM*				
002270					26 26	J013- 31	J013-L37	4PLIM*-1				
002272					26 26	J001- 07	J001-L33	4XNT*				
002274					26 26	J001-L33	J011- 42	4XNT*				
002276					26 26	J011- 42	J015-L31	4XNT*				
002280					26 26	J011- 34	J011-L39	4XPN*				
002290					26 26	J011-L39	J011-L40	4XPN*				
002300					26 26	J011- 08	J011-L28	4XPP*				
002310					26 26	J011-L28	J011-L29	4XPP*				
002312					26 26	J002- 07	J002-L33	4YNT*				
002314					26 26	J002-L33	J013- 42	4YNT*				
002316					26 26	J013- 42	J016-L31	4YNT*				
002320					26 26	J013- 34	J013-L39	4YPN*				
002330					26 26	J013-L39	J013-L40	4YPN*				
002340					26 26	J013- 08	J013-L28	4YPP*				
002350					26 26	J013-L28	J013-L29	4YPP*				
002360					26 26	J002- 22	J009-L02	5C4YN/-1				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
002380					26 26	J013- 13	J015- 20	SLFF				
002385					26 26	J013- 30	J016- 39	STSC-1				
002390					26 26	J010-L08	J011- 26	STSC/-1				
002400	6	18	30			J402-02	J404-02	AC-2				
002410	6	18	30			J402-03	TS01-A01	AC-3				
002420	6	18	30			J403-01	TS01-A01	AC-3				
002430	6	18	30			J404-03	TS01-B01	AC-3				
002440	6	18	30			J402-04	TS01-A02	ACOM				
002450	6	18	30			J403-02	TS01-A02	ACOM				
002460	6	18	30			J404-04	TS01-B02	ACOM				
002470	9	22	30		22 22	J006-L22	J007-L22	C				
002480	9	22	30		22 22	J007-L22	J008-L22	C				
002490	9	22	30		22 22	J008-L22	J010-L41	C				
002500	9	22	30		22 22	J010-L41	J012-L15	C				
002510	9	22	30		22 22	J012-L15	J014-L22	C				
002520	9	22	30		22 22	J014-L22	J015-L22	C				
002530	9	22	30		22 22	J015-L22	J016-L22	C				
002540	9	22	30		22 22	J016-L22	J017-L22	C				
002550	9	22	30		22	TP02	J017-L22	C				
002570					26 26	J003-L04	J008-L32	C1XP				
002580					26 26	J008-L32	J011-L23	C1XP				
002590					26 26	J011-L15	J011-L23	C1XP				
002600					26 26	J011- 16	J011-L15	C1XP				
002610					26 26	J011- 16	J013-L08	C1XP				
002620					26 26	J013-L08	J013-L09	C1XP				
002630					26 26	J013-L09	J014-L08	C1XP				
002635					26 26	J014- 06	J014-L08	C1XP				
002640					26 26	J014-L08	J014-L27	C1XP				
002650					26 26	J014-L27	J017-L27	C1XP				
002660					26 26	J017-L08	J017-L27	C1XP				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
002665					26 26	J001- 04	J001-L23	C1XP/				
002670					26 26	J001-L23	J003- 03	C1XP/				
002680					26 26	J003- 03	J006-L32	C1XP/				
002700					26 26	J006-L32	J011-L06	C1XP/				
002710					26 26	J003-L05	J006-L31	C2XN				
002720					26 26	J006-L31	J011-L05	C2XN				
002730					26 26	J011-L05	J011-L12	C2XN				
002740					26 26	J011-L12	J013- 16	C2XN				
002750					26 26	J013- 16	J013-L23	C2XN				
002760					26 26	J013-L23	J014-L18	C2XN				
002770					26 26	J014-L18	J014-L24	C2XN				
002780					26 26	J014-L24	J015-L25	C2XN				
002790					26 26	J015-L25	J017-L37	C2XN				
002795					26 26	J001- 05	J001-L27	C2XN/				
002800					26 26	J001-L27	J003- 04	C2XN/				
002810					26 26	J003- 04	J008-L31	C2XN/				
002830					26 26	J008-L31	J013-L12	C2XN/				
002840					26 26	J013-L04	J013-L12	C2XN/				
002850					26 26	J013-L04	J014-L37	C2XN/				
002860					26 26	J014-L37	J017-L24	C2XN/				
002870					26 26	J017-L18	J017-L24	C2XN/				
002880					26 26	J003-L10	J011-L11	C3YP				
002890					26 26	J011-L11	J011-L22	C3YP				
002900					26 26	J011-L22	J013- 15	C3YP				
002910					26 26	J013- 15	J013-L15	C3YP				
002920					26 26	J013-L11	J013-L15	C3YP				
002930					26 26	J013-L11	J017- 06	C3YP				
002935					26 26	J001-L40	J002- 04	C3YP/				
002940					26 26	J002- 04	J003- 09	C3YP/				
002960					26 26	J003- 09	J011-L20	C3YP/				
002970					26 26	J011- 15	J011-L20	C3YP/				
002980					26 26	J011- 15	J011-L04	C3YP/				
002990					26 26	J011-L04	J013-L05	C3YP/				
003000					26 26	J013-L05	J013-L06	C3YP/				
003010					26 26	J013-L06	J013-L22	C3YP/				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
003020					26 26	J003-L09	J016-L25	C4YN				
003025					26 26	J002- 05	J002-L23	C4YN/				
003030					26 26	J002-L23	J003- 08	C4YN/				
003040					26 26	J003- 08	J010- 09	C4YN/				
003060					26 26	J003-L16	J011-L19	C5ZP				
003070					26 26	J011-L16	J011-L19	C5ZP				
003080					26 26	J011-L03	J011-L16	C5ZP				
003090					26 26	J011-L03	J013-L03	C5ZP				
003100					26 26	J013-L03	J013-L16	C5ZP				
003110					26 26	J013-L16	J014-L36	C5ZP				
003120					26 26	J014-L36	J015- 07	C5ZP				
003130					26 26	J015- 07	J017-L36	C5ZP				
003140					26 26	J002-L27	J003- 12	C5ZP/				
003150					26 26	J003- 12	J011-L21	C5ZP/				
003170					26 26	J011- 14	J011-L21	C5ZP/				
003180					26 26	J011- 11	J011- 14	C5ZP/				
003190					26 26	J011- 04	J011- 11	C5ZP/				
003200					26 26	J011- 04	J013- 04	C5ZP/				
003210					26 26	J013- 04	J013- 11	C5ZP/				
003220					26 26	J013- 11	J015- 14	C5ZP/				
003230					26 26	J013- 14	J013-L21	C5ZP/				
003240					26 26	J013-L21	J014-L26	C5ZP/				
003250					26 26	J014-L17	J014-L26	C5ZP/				
003260					26 26	J014-L07	J014-L17	C5ZP/				
003270					26 26	J014-L07	J017-L07	C5ZP/				
003280					26 26	J017-L07	J017-L17	C5ZP/				
003290					26 26	J017-L17	J017-L26	C5ZP/				
003300					26 26	J006- 32	J008- 32	C63P5-				
003310					26 26	J008- 32	J011-L24	C63P5-				
003320					26 26	J003-L14	J011-L17	C6ZN				
003330					26 26	J011-L01	J011-L17	C6ZN				
003340					26 26	J011-L01	J013-L01	C6ZN				
003350					26 26	J013-L01	J013-L17	C6ZN				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
003360					26 26	J013-L17	J014-L35	C6ZN				
003370					26 26	J014-L23	J014-L35	C6ZN				
003380					26 26	J014-L06	J014-L23	C6ZN				
003390					26 26	J014-L06	J015- 17	C6ZN				
003400					26 26	J015- 17	J017-L06	C6ZN				
003410					26 26	J017-L06	J017-L23	C6ZN				
003420					26 26	J017-L23	J017-L35	C6ZN				
003430					26 26	J002-L40	J003- 13	C6ZN/				
003440					26 26	J003- 13	J011- 20	C6ZN/				
003460					26 26	J011- 20	J014-L25	C6ZN/				
003470					26 26	J014-L16	J014-L25	C6ZN/				
003480					26 26	J014-L16	J017-L16	C6ZN/				
003490					26 26	J017-L16	J017-L25	C6ZN/				
003500					26 26	J007-L03	J007-L04	CFFA				
003510					26 26	J007-L04	J007-L13	CFFA				
003520					26 26	J007-L13	J007-L14	CFFA				
003530					26 26	J007-L14	J007-L26	CFFA				
003540					26 26	J007-L26	J007-L27	CFFA				
003550					26 26	J007-L27	J007-L36	CFFA				
003560					26 26	J007-L36	J007-L37	CFFA				
003570					26 26	J007- 22	J007-L37	CFFA				
003580					26 26	J009- 06	J010-L18	CFS				
003590					26 26	J012- 20	J012-L01	CSSA				
003600					26 26	J012- 20	J012- 24	CSSA				
003610	9	16	30			J402-08	J403-05	Cx1				
003620	9	16	30			J402-09	J403-06	CX2				
003630	9	16	30			J402-10	J403-07	CX3				
003640					26 26	J011- 06	J015-L35	CXN*				
003650					26 26	J011- 05	J014- 17	CXP*				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
003660	9	16	30			J402-11	J403-14	CY1				
003670	9	16	30			J402-12	J403-15	CY2				
003680	9	16	30			J402-13	J403-16	CY3				
003690					26 26	J013- 06	J016-L35	CYN*				
003700					26 26	J013- 05	J017- 17	CYP*				
003710					26 26	J004- 11	J004- 12	CZ1				
003720	9	22	30		22	J402-14	J004- 12	CZ1				
003730					26 26	J003-L17	J009-L34	DSAMPL				
003750	9	22	30		22	J406-05	J001- 12	DXN-N				
003760	9	22	30		22	J406-01	J001- 11	DXN-P				
003770	9	22	30		22	J406-06	J001- 03	DXP-N				
003780	9	22	30		22	J406-02	J001-L03	DXP-P				
003790	9	22	30		22	J406-08	J002- 03	DYN-N				
003800	9	22	30		22	J406-04	J002-L03	DYN-P				
003810	9	22	30		22	J406-07	J001- 16	DYP-N				
003820	9	22	30		22	J406-03	J001-L16	DYP-P				
003830	9	22	30		22	J406-11	J002- 16	DZN-N				
003840	9	22	30		22	J406-09	J002-L16	DZN-P				
003850	9	22	30		22	J406-12	J002- 12	DZP-N				
003860	9	22	30		22	J406-10	J002- 11	DZP-P				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
003870					26 26	J007-L38	J011- 28	ENT				
003872					26 26	J011- 28	J016- 17	ENT				
003874					26 26	J001-L31	J002-L31	ENT/				
003875					26 26	J002-L31	J007-L43	ENT/				
003876					26 26	J007-L43	J015-L32	ENT/				
003877					26 26	J015-L32	J016-L32	ENT/				
003880		24	10			S021-ACOM	S021-D16	FF				
003890						TS01-B07	TS01-B08	GRD	STRAP	1		
003900	0	16	30			J401-19	TS01-A07	GRD				
003910	0	16	30			J404-11	TS01-A07	GRD				
003920	0	16	30			J405-11	TS01-A08	GRD				
003930	0	16	30			J406-13	TS01-A08	GRD				
003940	0	16	30			J406-15	TS01-B08	GRD				
003950	0	22	30			S401- 02	TS01-B07	GRD				
003960	9	22	30		22	TS01-B08	J001- 01	GRD				
003970	9	22	30		22 22	J001- 01	J001- 01	GRD				
003980	9	22	30		22 22	J002- 01	J003- 01	GRD				
003990	9	22	30		22 22	J003- 01	J004- 01	GRD				
004000	9	22	30		22 22	J004- 01	J005- 01	GRD				
004010	9	22	30		22 22	J005- 01	J006- 01	GRD				
004020	9	22	30		22 22	J006- 01	J007- 01	GRD				
004030	9	22	30		22 22	J007- 01	J008- 01	GRD				
004040	9	22	30		22 22	J008- 01	J009- 01	GRD				
004050	9	22	30		22 22	J009- 01	J010- 01	GRD				
004060	9	22	30		22 22	J010- 01	J011- 01	GRD				
004070	9	22	30		22 22	J011- 01	J012- 01	GRD				
004080	9	22	30		22 22	J012- 01	J013- 01	GRD				
004090	9	22	30		22 22	J013- 01	J014- 01	GRD				
004100	9	22	30		22 22	J014- 01	J015- 01	GRD				
004110	9	22	30		22 22	J015- 01	J016- 01	GRD				
004120	9	22	30		22 22	J016- 01	J017- 01	GRD				
004130	9	22	30		22 22	J017- 01	J017- 43	GRD				
004140	9	22	30		22	TS01-B08	J001- 43	GRD				
004150	9	22	30		22 22	J001- 43	J002- 43	GRD				
004160	9	22	30		22 22	J002- 43	J003- 43	GRD				
004170	9	22	30		22 22	J003- 43	J004- 43	GRD				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
004180	9	22	30		22 22	J004- 43	J005- 43	GRD				
004185	9	22	30		22 22	J005- 43	J006- 43	GRD				
004190	9	22	30		22 22	J006- 43	J007- 43	GRD				
004200	9	22	30		22 22	J007- 43	J008- 43	GRD				
004210	9	22	30		22 22	J008- 43	J009- 43	GRD				
004220	9	22	30		22 22	J009- 43	J010- 43	GRD				
004230	9	22	30		22 22	J010- 43	J011- 43	GRD				
004240	9	22	30		22 22	J011- 43	J012- 43	GRD				
004250	9	22	30		22 22	J012- 43	J013- 43	GRD				
004260	9	22	30		22 22	J013- 43	J014- 43	GRD				
004270	9	22	30		22 22	J014- 43	J015- 43	GRD				
004280	9	22	30		22 22	J015- 43	J016- 43	GRD				
004290	9	22	30		22 22	J016- 43	J017- 43	GRD				
004300	9	22	30		22 22	J002- 40	J002- 43	GRD				
004320	9	22	30		22 22	J004-L18	J005- 01	GRD				
004330	9	22	30		22 22	J004-L18	J004-L19	GRD				
004340	9	22	30		22 22	J004-L19	J005-L19	GRD				
004350	9	22	30		22 22	J005-L18	J005-L19	GRD				
004360	9	22	30		22 22	J009- 01	J009- 09	GRD				
004370	9	22	30		22 22	J010- 01	J010- 05	GRD				
004380	9	22	30		22 22	J010- 05	J010- 06	GRD				
004390	9	22	30		22 22	J010- 06	J010- 15	GRD				
004395	9	22	30		22 22	J010- 11	J010- 15	GRD				
004400	9	22	30		22 22	J010-L11	J011- 01	GRD				
004410	9	22	30		22 22	J010-L11	J011- 33	GRD				
004420	9	22	30		22 22	J013- 33	J013- 43	GRD				
004430		24	10			S001- 02	S001- 05	GRD				
004440		24	10			S001- 05	S007- 01	GRD				
004450		24	10			S006- 01	S007- 01	GRD				
004460		24	10			S005- 01	S006- 01	GRD				
004470		24	10			S004- 01	S005- 01	GRD				
004480		24	10			S003- 01	S004- 01	GRD				
004490		24	10			S002- 01	S003- 01	GRD				
004500		24	10			S002- 01	S010- 02	GRD				
004510	0	22	30			S010- 02	TP04	GRD				
004520	9	22	30		22	TP04	J017- 43	GRD				
004530	0	22	30			S021-D15	TP04	GRD				
004540	0	16	30			J402-05	TS02-A03	GRD CH				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
004550	0	16	30			J403-03	TS02-A03	GRD CH				
004560	0	16	30			J404-05	TS02-A04	GRD CH				
004570	0	16	30			J405-09	TS02-B03	GRD CH				
004580	0	16	30			J405-10	TS02-B04	GRD CH				
004590	0	16	30			J406-14	TS02-B05	GRD CH				
004592	0	16	30			CHASSIS	TS02-A05	GRD CH				
004594						TS02-B03	TS02-B04	GRD CH	STRAP		2	
004596						TS02-A04	TS02-A05	GRD CH	STRAP		1	
004600	0	16	30			J402-07	TS02-A01	GRD-24RX			1	
004620	0	16	30			J404-06	TS02-B01	GRD-24RX				
004622	0	16	30			R003- A	TS02-B01	GRD-24RX				
004624	0	16	30			R003- A	R003- C	GRD-24RX				
004630	0	16	30			J402-15	TS02-A02	GRD-24RY				
004650	0	16	30			J404-07	TS02-B02	GRD-24RY				
004652	0	16	30			R004- A	TS02-B02	GRD-24RY				
004654	0	16	30			R004- A	R004- C	GRD-24RY				
004660	9	22	30		22	J402-17	J004- 03	HCZ1				
004670					26 26	J012- 08	J012-L05	JCTDX				
004680					26 26	J012- 27	J012- 37	JCTDY				
004690					26 26	J012-L07	J012-L19	JTDX				
004700					26 26	J012-L19	J012-L21	JTDX				
004710					26 26	J012-L20	J012-L22	JTDY				
004720					26 26	J012-L22	J012-L30	JTDY				
004730					26 26	J012- 30	J012-L33	JTMV				
004740	6	18	30			J402-01	J404-01	KAC				
004750					26	S021-D13	J013- 17	LFF				
004760						S021-D13	S016- 01	LFF				
004770					26 26	J010- 38	J010-L28	PCLK				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
004771					26 26	J006-L03	J008-L03	PENB*				
004772					26 26	J008-L03	J014-L02	PENB*				
004773					26 26	J014-L02	J014-L13	PENB*				
004774					26 26	J014-L13	J014-L20	PENB*				
004775					26 26	J011- 40	J014-L20	PENB*				
004776					26 26	J014-L20	J017-L20	PENB*				
004777					26 26	J017-L13	J017-L20	PENB*				
004778					26 26	J017-L02	J017-L13	PENB*				
004780	9	22	30		22	J405-17	J013- 40	PLIM*				
004790					26 26	J003- 20	J015-L17	PLOT				
004800	9	22	30		22	J405-19	J003-L28	PRDY				
004810					26 26	J003- 26	J003- 29	PRDY/				
004820					26 26	J003- 26	J013-L19	PRDY/				
004824	9	22	30			J405-16	J406-16	PRS				
004826	9	22	30		22	J405-16	J009- 15	PRS				
004830					26 26	J001- 26	J001-L10	PXN				
004840					26 26	J001-L01	J001-L20	PXP				
004850					26 26	J002-L01	J002-L20	PYN				
004860					26 26	J001-L15	J001-L38	PYP				
004870					26 26	J002-L15	J002-L38	PZN				
004880					26 26	J002- 26	J002-L10	PZP				
004890					26	S021-D18	J015-L23	RFF				
004900						S021-D18	TP03	RFF				
004910					26	S022- 05	J009-L25	RSP				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
004920	9	22	30		22	J401-02	J003-L27	RLN				
004930					26 26	J003-L27	J006-L02	RLN				
004940					26 26	J006-L02	J008-L02	RLN				
004950					26 26	J008-L02	J009- 02	RLN				
004955					26 26	J009- 02	J015- 11	RLN				
004960					26 26	J015- 11	J015-L20	RLN				
004970					26 26	J015-L20	J016-L20	RLN				
004980					26 26	J016- 11	J016-L20	RLN				
004990					26	S011- 01	J010-L29	S18V				
005000						S011- 01	S012- 03	S18V				
005010					26 26	J002- 31	J006-L33	S700				
005020					26 26	J006-L33	J008-L33	S700				
005030					26 26	J008-L33	J010- 08	S700				
005040					26 26	J010- 08	J014- 18	S700				
005050					26 26	J014- 18	J014-L21	S700				
005060					26 26	J014-L21	J015-L37	S700				
005065					26 26	J015- 31	J016- 31	S700				
005070					26 26	J015-L37	J016-L37	S700				
005072					26 26	J016- 31	J016-L24	S700				
005074					26 26	J016-L24	J016-L37	S700				
005080					26 26	J016-L37	J017- 18	S700				
005090					26 26	J017- 18	J017-L21	S700				
005100					26	S001- 03	J017-L21	S700				
005102					26 26	J001- 06	J002- 06	S700/				
005104					26 26	J002- 06	J002- 32	S700/				
005110					26 26	J002- 32	J014- 07	S700/				
005130					26 26	J014- 07	J014-L43	S700/				
005140					26 26	J014-L43	J015- 08	S700/				
005150					26 26	J015- 08	J015- 18	S700/				
005160					26 26	J015- 18	J015-L27	S700/				
005170					26 26	J015-L27	J016-L27	S700/				
005172					26 26	J016- 08	J016- 18	S700/				
005174					26 26	J016- 18	J016-L27	S700/				
005180					26 26	J016-L27	J017- 07	S700/				
005190					26 26	J017- 07	J017-L43	S700/				
005200					26	S001- 01	J017-L43	S700/				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
005210						S012- 06	S014- 01	S8V				
005220						S014- 01	S015- 01	S8V				
005230						S015- 01	S016- 02	S8V				
005234						S016- 02	S018- 01	S8V				
005236						S018- 01	S019- 01	S8V				
005240					26	S007- 02	J001- 18	SC1XP				
005250					26	S006- 02	J001-L26	SC2XN				
005260					26	S005- 02	J001-L36	SC3YP				
005270					26	S004- 02	J002- 18	SC4YN				
005280					26	S003- 02	J002-L26	SC5ZP				
005290					26	S002- 02	J002-L36	SC6ZN				
005300	9	22	30		22	S401- 03	J001- 31	SC				
005310					26 26	J001- 31	J014-L42	SC				
005320	9	22	30		22 22	J014-L01	J014-L42	SC				
005330					26 26	J014-L01	J017-L01	SC				
005340					26 26	J017-L01	J017-L42	SC				
005350	9	22	30		22	S401- 01	J001- 32	SC/				
005360					26 26	J001- 32	J014- 29	SC/				
005370					26 26	J014- 29	J017- 29	SC/				
005380					26 26	J001- 27	J001-L39	SCS500				
005390					26 26	J001- 27	J001-L21	SCS500				
005400					26 26	J001-L21	J002-L21	SCS500				
005410					26 26	J002- 27	J002-L21	SCS500				
005420					26 26	J002- 27	J002- 34	SCS500				
005430					26 26	J002- 34	J002-L39	SCS500				
005440					26	S001- 04	J002-L39	SCS500				
005450						S001- 04	S010- 06	SCS500				
005460					26 26	J001- 28	J001- 37	SCS700				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
005470					26 26	J001- 20	J001- 28	SCS700				
005480					26 26	J001- 20	J002- 20	SCS700				
005490					26 26	J002- 20	J002- 28	SCS700				
005500					26 26	J002- 28	J002- 33	SCS700				
005510					26 26	J002- 33	J002- 37	SCS700				
005520					26 26	J002- 37	J002- 41	SCS700				
005530					26	S001- 06	J002- 41	SCS700				
005540						S001- 06	S010- 05	SCS700				
005550					26 26	J001-L29	J014-L29	SENT				
005560					26	S009- 03	J014-L29	SENT				
005570					26 26	J001-L34	J014- 36	SENT/				
005580					26	S009- 04	J014- 36	SENT/				
005590	9	22	30		22	J401-09	J010- 16	SFAS				
005600		24	10			S013- 04	S013- 12	SUXN				
005610						S013- 04	S017- 03	SUXN				
005620		24	10			S017- 03	S017- 04	SUXN				
005630		24	10			S013- 01	S013- 09	SUXP				
005640						S013- 01	S017- 01	SUXP				
005650		24	10			S017- 01	S017- 06	SUXP				
005660		24	10			S013- 06	S013- 10	SUYN				
005670						S013- 06	S020- 03	SUYN				
005680		24	10			S020- 03	S020- 04	SUYN				
005690		24	10			S013- 03	S013- 07	SUYP				
005700						S013- 03	S020- 01	SUYP				
005710		24	10			S020- 01	S020- 06	SUYP				
005720					26 26	J006-L06	J013- 27	SLNX/				
005730	9	22	30		22	J401-14	J005- 31	SLNY/				
005740					26 26	J005- 31	J008-L06	SLNY/				
005750					26 26	J008-L06	J013-L33	SLNY/				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
005760					26 26	J006-L36	J013- 26	SLPX/				
005770	9	22	30		22	J401-15	J005- 26	SLPY/				
005780					26 26	J005- 26	J008-L36	SLPY/				
005790					26 26	J008-L36	J013- 28	SLPY/				
005800	9	22	30		22	J401-07	J009-L07	SMX/				
005810					26 26	J009-L07	J010-L05	SMX/				
005820					26 26	J010-L05	J015- 10	SMX/				
005830					26 26	J015- 10	J015-L21	SMX/				
005840	9	22	30		22	J401-11	J009-L10	SMY/				
005850					26 26	J009-L10	J010-L06	SMY/				
005860					26 26	J010-L06	J016- 10	SMY/				
005870					26 26	J016- 10	J015-L21	SMY/				
005880					26 26	J001- 33	J016- 07	SCPR				
005890					26	S010- 03	J016- 07	SCPR				
005900	9	22	30		22	J401-04	J007-L06	SPD				
005910					26	S021-R15	J007-L06	SPD				
005920						S021-R15	S022- 06	SPD				
005930	9	22	30			J401-17	J405-18	SPL1				
005940	9	22	30		22	J401-05	J007-L01	SPU				
005950					26	S021-C15	J007-L01	SPU				
005960						S021-C15	S022- 04	SPU				
005970						S021-CCOM	S015- 03	SRV				
005980					26	S011- 03	J010-L23	SSC				
005982					26 26	J001-L32	J002-L32	SSIM				
005984					26 26	J002-L32	J002-L41	SSIM				
005985					26 26	J001- 34	J002-L41	SSIM				
005990					26 26	J001- 34	J011- 27	SSIM				
006000					26 26	J011- 27	J014-L30	SSIM				
006010					26	S002- 03	J014-L30	SSIM				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
006020		24	10			S002- 03	S003- 03	SSIM				
006030		24	10			S003- 03	S004- 03	SSIM				
006040		24	10			S004- 03	S005- 03	SSIM				
006050		24	10			S005- 03	S006- 03	SSIM				
006060		24	10			S006- 03	S007- 03	SSIM				
006070		24	10			S007- 03	S010- 01	SSIM				
006080	9	22	30		22	J401-13	J010- 18	SSLO				
006090					26	S021-D01	J010- 18	SSLO				
006100						S021-D01	S008- 02	SSLO				
006110						S021-D03	S008- 03	SSLOR				
006120						S021-BCOM	S016- 05	SSV				
006130					26 26	J002-L29	J010-L03	STAT/				
006140					26	S012- 04	J010-L03	STAT/				
006150						R001- 01	S008- 05	STDX				
006160					26	R001- 02	J012-L08	STDXF				
006170		24	10			R001- 02	R001- 03	STDXF				
006180						R001- 03	S008- 04	STDXF				
006190						S021-D05	S008- 06	STDXR				
006200						R002- 01	S008- 08	STDY				
006210					26	R002- 02	J012-L23	STDYF				
006220		24	10			R002- 02	R002- 03	STDYF				
006230						R002- 03	S008- 07	STDYF				
006240						S021-D11	S008- 09	STDYR				
006250					26	S017- 05	J011-L38	SXMXN				
006260					26	S017- 02	J011-L26	SXMXP				
006270	9	22	30		22	J401-08	J009-L08	SXN				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
006280					26 26	J009-L08	J011-L42	SXN				
006290	9	22	30		22	J401-06	J009-L06	SXP				
006300					26 26	J009-L06	J011-L31	SXP				
006310					26	S020- 05	J013-L38	SYMYN				
006320					26	S020- 02	J013-L26	SYMYP				
006330	9	22	30		22	J401-12	J009-L11	SYN				
006340					26 26	J009-L11	J013-L42	SYN				
006350	9	22	30		22	J401-10	J009-L09	SYP				
006360					26 26	J009-L09	J013-L31	SYP				
006370					26	S022- 02	J004-L01	SZA				
006380	9	22	30		22 22	J010-L36	J012- 42	TC				
006390	9	22	30		22	TP01	J012- 42	TC				
006400					26	S021-A16	J012- 07	TCX				
006410					26 26	J012- 05	J014-L33	TCX/				
006420					26	S021-A17	J012- 36	TCY				
006430					26 26	J012-L24	J017-L33	TCY/				
006440	9	22	30		22	J405-14	J002- 42	TMPL				
006450					26 26	J002-L43	J003- 16	TMPL/				
006460					26 26	J012-L35	J016-L23	TMV				
006470					26	S021-A18	J016-L23	TMV				
006550					26 26	J012-L40	J015-L33	TMV/				
006560					26 26	J015-L33	J016-L33	TMV/				
006590	9	22	30		22	J405-01	J001-L22	TR1				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
006600	9	22	30		22	J405-02	J001- 29	TR2				
006610	9	22	30		22	J405-03	J001- 38	TR3				
006620	9	22	30		22	J405-04	J002-L22	TR4				
006630	9	22	30		22	J405-07	J002- 29	TR5				
006640	9	22	30		22	J405-08	J002- 38	TR6				
006650					26 26	J010- 36	J013- 32	TSC				
006655					26 26	J009-L04	J010-L10	TSC/				
006660					26 26	J010-L10	J012- 41	TSC/				
006665					26 26	J012- 41	J016- 35	TSC/				
006670					26 26	J014- 41	J014-L32	XC				
006680					26	S021-A01	J014- 41	XC				
006690					26 26	J014- 40	J015-L41	XC/				
006700					26 26	J015-L07	J015-L41	XC/				
006702	9	16	30			J403-08	TS02-A07	XCC				
006704	9	16	30			R003- B	TS02-B07	XCC				
006710					26 26	J004- 17	J006-L28	XL1				
006720					26 26	J006-L11	J006-L28	XL1				
006730					26 26	J006-L05	J006-L11	XL1				
006740					26 26	J006-L05	J007-L15	XL1				
006750					26	S021-A02	J007-L15	XL1				
006760					26 26	J006- 07	J006- 35	XL1/				
006765					26 26	J006- 35	J007-L20	XL1/				
006770					26 26	J004- 14	J006- 02	XL2				
006780					26 26	J006- 02	J006-L17	XL2				
006790					26 26	J006-L17	J006-L20	XL2				
006800					26	S021-A03	J006-L20	XL2				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
006810					26 26	J006- 03	J006-L23	XL2/				
006820					26 26	J006-L23	J006-L26	XL2/				
006830					26 26	J006- 34	J006-L26	XL2/				
006840					26 26	J004- 06	J006- 10	XL3				
006850					26 26	J006- 10	J006- 17	XL3				
006860					26 26	J006- 17	J006- 26	XL3				
006870					26 26	J006- 26	J006- 41	XL3				
006880					26	S021-A04	J006- 41	XL3				
006890					26 26	J006- 40	J006-L42	XL3/				
006900					26 26	J006-L16	J006-L42	XL3/				
006910					26 26	J006-L08	J006-L16	XL3/				
006915					26 26	J014-L31	J015-L40	XM1				
006920					26 26	J015- 02	J015-L40	XM1				
006930					26	S021-A05	J015- 02	XM1				
006934					26 26	J011-L36	J014- 11	XM1/				
006936					26 26	J014- 11	J014-L12	XM1/				
006940					26 26	J014-L12	J015- 03	XM1/				
006950					26 26	J014- 10	J015-L28	XM2				
006960					26 26	J015- 41	J015-L28	XM2				
006970					26	S021-A06	J015- 41	XM2				
006980					26 26	J015-L08	J015-L10	XM2/				
006990					26 26	J015- 40	J015-L10	XM2/				
007000					26	S021-A07	J014- 02	XM3				
007010					26 26	J014- 02	J015-L01	XM3				
007020					26 26	J011-L35	J015- 29	XM3/				
007030					26 26	J015- 29	J015-L29	XM3/				
007040					26 26	J015-L12	J015-L29	XM3/				
007050					26 26	J015-L11	J015-L12	XM3/				
007060					26 26	J015-L04	J015-L11	XM3/				
007070					26 26	J014- 03	J015-L04	XM3/				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
007080					26 26	J015- 24	J015- 28	XMXN-				
007090					26	S013- 05	J015- 28	XMXN-				
007100					26 26	J015- 14	J015- 15	XMXP-				
007110					26	S013- 02	J015- 15	XMXP-				
007112					26 26	J011- 41	J015-L43	XNT*				
007114					26 26	J014- 32	J015-L06	XNT*				
007116					26 26	J015-L06	J015-L43	XNT*				
007120	9	22	30		22	J403-09	J004-L22	XP1				
007130	9	22	30		22	J403-10	J004- 16	XP2				
007140	9	22	30		22	J403-11	J004- 10	XP3				
007150					26 26	J006-L07	J006-L18	XPN*				
007160					26 26	J006- 18	J006-L18	XPN*				
007170					26 26	J006- 18	J006-L24	XPN*				
007180					26 26	J006-L24	J006-L29	XPN*				
007190					26 26	J006- 36	J006-L29	XPN*				
007200					26 26	J006- 36	J011- 35	XPN*				
007210					26 26	J006- 06	J006-L12	XPP*				
007220					26 26	J006- 30	J006-L12	XPP*				
007230					26 26	J006- 30	J006-L27	XPP*				
007240					26 26	J006-L27	J006-L35	XPP*				
007250					26 26	J006-L35	J006-L43	XPP*				
007260					26 26	J006-L43	J011- 12	XPP*				
007270					26 26	J014-L10	J014-L15	XTMV-				
007280					26 26	J014-L10	J015-L02	XTMV-				
007290					26	S021-A08	J017- 41	YC				
007300					26 26	J017- 41	J017-L32	YC				
007310					26 26	J016-L07	J016-L41	YC/				
007320					26 26	J016-L41	J017- 40	YC/				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
007322	9	16	30			J403-17	TS02-A08	YEC				
007324	9	16	30			R004- B	TS02-B08	YEC				
007330					26 26	J005- 17	J007-L28	YL1				
007340					26 26	J007-L28	J008-L28	YL1				
007350					26 26	J008-L11	J008-L28	YL1				
007360					26 26	J008-L05	J008-L11	YL1				
007370					26	S021-A09	J008-L05	YL1				
007375					26 26	J007-L33	J008- 35	YL1/				
007380					26 26	J008- 07	J008- 35	YL1/				
007390					26 26	J005- 14	J008- 02	YL2				
007400					26 26	J008- 02	J008-L17	YL2				
007410					26 26	J008-L17	J008-L20	YL2				
007420					26	S021-A10	J008-L20	YL2				
007430					26 26	J008- 03	J008-L23	YL2/				
007440					26 26	J008-L23	J008-L26	YL2/				
007450					26 26	J008- 34	J008-L26	YL2/				
007460					26 26	J005- 06	J008- 10	YL3				
007470					26 26	J008- 10	J008- 17	YL3				
007480					26 26	J008- 17	J008- 26	YL3				
007490					26 26	J008- 26	J008- 41	YL3				
007500					26	S021-A11	J008- 41	YL3				
007510					26 26	J008-L08	J008-L16	YL3/				
007520					26 26	J008-L16	J008-L42	YL3/				
007530					26 26	J008- 40	J008-L42	YL3/				
007540					26 26	J016- 02	J016-L40	YM1				
007550					26 26	J016-L40	J017-L31	YM1				
007560					26	S021-A12	J017-L31	YM1				
007570					26 26	J013-L36	J016- 03	YM1/				
007580					26 26	J016- 03	J017- 11	YM1/				
007590					26 26	J017- 11	J017-L12	YM1/				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
007600					26	S021-A13	J016- 41	YM2				
007610					26 26	J016- 41	J016-L28	YM2				
007620					26 26	J016-L28	J017- 10	YM2				
007630					26 26	J016- 40	J016-L10	YM2/				
007640					26 26	J016-L08	J016-L10	YM2/				
007650					26 26	J016-L01	J017- 02	YM3				
007660					26	S021-A14	J017- 02	YM3				
007670					26 26	J013-L35	J016- 29	YM3/				
007680					26 26	J016- 29	J016-L29	YM3/				
007690					26 26	J016-L12	J016-L29	YM3/				
007700					26 26	J016-L11	J016-L12	YM3/				
007710					26 26	J016-L04	J016-L11	YM3/				
007720					26 26	J016-L04	J017- 03	YM3/				
007730					26 26	J016- 24	J016- 28	YMYN-				
007740					26	S013- 11	J016- 28	YMYN-				
007750					26 26	J016- 14	J016- 15	YMYP-				
007760					26	S013- 08	J016- 15	YMYP-				
007762					26 26	J013- 41	J016-L43	YNT*				
007764					26 26	J016-L06	J016-L43	YNT*				
007766					26 26	J016-L43	J017- 32	YNT*				
007770	9	22	30		22	J403-18	J005-L22	YP1				
007780	9	22	30		22	J403-19	J005- 16	YP2				
007790	9	22	30		22	J403-20	J005- 10	YP3				
007800					26 26	J008- 18	J008-L07	YPN*				
007810					26 26	J008-L07	J008-L18	YPN*				
007820					26 26	J008-L18	J008-L24	YPN*				
007830					26 26	J008-L24	J008-L29	YPN*				
007840					26 26	J008- 36	J008-L29	YPN*				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
007850					26 26	J008- 36	J013- 35	YPN*				
007860					26 26	J008-L35	J008-L43	YPP*				
007870					26 26	J008- 30	J008-L35	YPP*				
007880					26 26	J008- 30	J008-L27	YPP*				
007890					26 26	J008-L12	J008-L27	YPP*				
007900					26 26	J008- 06	J008-L12	YPP*				
007910					26 26	J008- 06	J013- 12	YPP*				
007920					26 26	J016-L02	J017-L10	YTMV-				
007930					26 26	J017-L10	J017-L15	YTMV-				
007940					26	S021-A15	J007-L05	ZA				
007950						S021-A15	S022- 01	ZA				
007960					26	S022- 03	J007-L10	ZA/				

TERM LISTING

POWER SUPPLY-600/700 ELECTRONICS W/L-10007-402

CONTROL 133

REVISION PAGE

REVISION	DATE	EFFECTIVITY	APPLICABLE ENGINEERING ORDERS	
NC	06 24 65			
A	10 18 66	SER. NO. 45 AND SUBS		AE 000010
B	08 01 67	SER. NO. 60 AND SUBS		BE 000020
C	01 10 68	NEXT PARTS MADE- RECORD CHANGE		CE 000030

THE FOLLOWING WIRE CHANGES ARE INCLUDED IN THIS LISTING

	REV	WIRE	C	S	T	LNGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG
DEL	B	000065						T002-BK/R	TB01-A02	AC1-K			
ADD	B	000065						T002-BK/R	TB01-A02	AC1-K	T2-01	5	
DEL	B	000070						T002-BLU	TB01-A01	AC2			
ADD	B	000070						T002-BLU	TB01-A01	AC2	T2-02	5	
DEL	B	000100						T002-BK/W	TB01-A05	AC3			
ADD	B	000100						T002-BK/W	TB01-A05	AC3	T2-03	5	
DEL	B	000130						T002-BLK	TB01-A03	AC4			
ADD	B	000130						T002-BLK	TB01-A03	AC4	T2-04	5	
DEL	B	000200						T002-WH	TB01-A07	ACOM			
ADD	B	000200						T002-WH	TB01-A07	ACOM	T2-05	5	
DEL	B	000590	9	22	30			C010-POS	TP5	+24V			
ADD	B	000590	9	22	30			BUS -1E	TP5	+24V			
DEL	B	000600		12	10			C008-POS	C010-POS	+24V		1	
DEL	B	000610	9	18	30			C007-POS	R001-02	+24V			
ADD	B	000610	9	18	30			BUS -1E	R001-02	+24V			
DEL	B	000620		12	10			C007-POS	C008-POS	+24V		1	
DEL	B	000630		12	10			C006-POS	C007-POS	+24V		1	
DEL	B	000640		12	10			E001	C006-POS	+24V		1	
ADD	B	000640		12	10			E001	BUS -1B	+24V		1	
DEL	B	000650	9	16	30			J202-15	C010-POS	+24V			
ADD	B	000650	9	16	30			J202-15	BUS -1D	+24V			
DEL	B	000660	9	16	30			J202-14	C010-POS	+24V			
ADD	B	000660	9	16	30			J202-14	BUS -1D	+24V			
DEL	B	000670	9	16	30			J202-13	C010-POS	+24V			
ADD	B	000670	9	16	30			J202-13	BUS -1C	+24V			

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000590	9	22	30			BUS -1E	TP5	+24V				
000610	9	18	30			BUS -1E	R001-02	+24V				
000640		12	10			E001	BUS -1B	+24V		1		
000650	9	16	30			J202-15	BUS -1D	+24V				
000660	9	16	30			J202-14	BUS -1D	+24V				
000670	9	16	30			J202-13	BUS -1C	+24V				
000680		24	10			J001-L15	J001-L16	+25U				
000690	9	22	30			J001-L16	C003-POS	+25U				
000700	9	18	30			Q003-C	C003-POS	+25U				
000710		20	10			CR01-LUG	CR04-LUG	+25U				
000720	9	18	30			CR04-LUG	C003-POS	+25U				
000730		24	10			J001- 26	J001- 27	-8E				
000740	9	20	30			J001- 27	J001- 39	-8E				
000750		24	10			J001- 28	J001- 29	-8V				
000760		24	10			J001- 29	J001- 30	-8V				
000770		24	10			J001- 30	J001- 31	-8V				
000780		24	10			J001- 31	J001- 32	-8V				
000790		24	10			J001- 32	J001- 33	-8V				
000800	9	22	30			J001- 31	TP2	-8V				
000810	9	20	30			J001- 32	C005-NEG	-8V				
000820	9	18	30			J202-10	J001- 29	-8V				
000830						T001-BLU	C005-NEG	-8V				
000840		24	10			J001- 37	J001- 38	-14R				
000850	9	20	30			J001- 37	C005-POS	-14R				
000860		20	10			CR03-LUG	CR06-LUG	-14R				
000870	9	18	30			CR06-LUG	C005-POS	-14R				
000880						T001-VI01	J001- 06	13AC1				
000890						T001-VI02	J001-L01	13AC2				
000900						T001-ORG1	CR02-STUD	14AC1				
000910						T001-ORG2	CR05-STUD	14AC2				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000920						T001-GRN1	CR03-STUD	14AC3				
000930						T001-GRN2	CR06-STUD	14AC4				
000940						T002-YL1	CR07-STUD	24AC1	T2-08	5		
000950						T002-YL2	CR08-STUD	24AC2	T2-10	5		
000960						T002-RD1	C009-01	24TC1	T2-06	5		
000970						T002-RD2	C009-02	24TC2	T2-07	5		
000980						T001-BRN1	CR01-STUD	25AC1				
000990						T001-BRN2	CR04-STUD	25AC2				
001000	0	20	30			J202-05	E002	CHASSIS		3		
001010	0	20	30			J201-GR	E002	CHASSIS		3		
001020		24	10			J001-L24	J001-L25	GRD				
001030		24	10			J001-L25	J001-L26	GRD				
001040		24	10			J001-L26	J001-L27	GRD				
001050		24	10			J001-L27	J001-L28	GRD				
001060		24	10			J001-L28	J001-L29	GRD				
001070		24	10			J001-L29	J001-L30	GRD				
001080		24	10			J001-L30	J001-L31	GRD				
001090		24	10			J001-L31	J001-L32	GRD				
001100		24	10			J001-L32	J001-L33	GRD				
001110		24	10			J001-L33	J001-L34	GRD				
001120		24	10			J001-L34	J001-L35	GRD				
001130		24	10			J001-L35	J001-L36	GRD				
001140	0	18	30			J001-L26	BUS -2D	GRD				
001150	0	22	30			J001-L30	TP1	GRD				
001160	0	18	30			J001-L31	C003-NEG	GRD				
001170	0	18	30			J001-L32	C004-NEG	GRD				
001180	0	20	30			J001-L33	C002-NEG	GRD				
001190	0	20	30			J001-L34	C001-NEG	GRD				
001200	0	16	30			J202-06	BUS -2D	GRD				
001210	0	16	30			J202-07	BUS -2C	GRD				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
001220	0	18	30			J202-11	J001-L25	GRD				
001230						T002-B/Y	BUS -2B	GRD	T2-09	5		
001260	9	18	30			BUS -2E	R001-01	GRD				
001280						T001-RED	C003-NEG	GRD				
001290						T001-YEL	C004-NEG	GRD				
001300	6	20	30			J202-01	K001-01	KAC	115AC RELAY			

TERM LISTING

RESISTOR PANEL -700 SERIES W/L 10840-203

CONTROL 158

REVISION PAGE

REVISION	DATE	EFFECTIVITY	APPLICABLE ENGINEERING ORDERS
NC	06 24 65		
A	05 24 65		AE 000010
B	02 03 67	NEXT PARTS MADE	BE 000020
C	01 05 68	RECORD CHANGE	CE 000030
D	08 21 68	ALL PARTS	CDE 000040

THE FOLLOWING WIRE CHANGES ARE INCLUDED IN THIS LISTING

	REV	WIRE	C	S	T	LNGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG
DEL	B	000050		18	30			CR17-STUD	R029-B	+24V-X		1	
ADD	B	000050	9	18	30			CR17-STUD	R029-B	+24V-X		1	
DEL	B	000060		20	30			CR17-STUD	E001	+24V-X			
ADD	B	000060	9	20	30			CR17-STUD	E001	+24V-X			
DEL	B	000080		20	30			E003	E004	+24V-X			
ADD	B	000080	9	20	30			E003	E004	+24V-X			
DEL	B	000120		18	30			CR18-STUD	R027-A	+24V-Y		1	
ADD	B	000120	9	18	30			CR18-STUD	R027-A	+24V-Y		1	
DEL	B	000130		20	30			CR18-STUD	E002	+24V-Y			
ADD	B	000130	9	20	30			CR18-STUD	E002	+24V-Y			
DEL	B	000140		20	30			E002	E006	+24V-Y			
ADD	B	000140	9	20	30			E002	E006	+24V-Y			
DEL	B	000150		20	30			E006	E007	+24V-Y			
ADD	B	000150	9	20	30			E006	E007	+24V-Y			
ADD	B	000245						CR10-LUG	R021-A	CX1		1	
ADD	B	000265						CR11-LUG	R019-C	CX2		1	
ADD	B	000285						CR12-LUG	R017-A	CX3		1	
ADD	B	000305						CR13-LUG	R022-A	CY1		1	
ADD	B	000325						CR14-LUG	R020-C	CY2		1	
ADD	B	000345						CR15-LUG	R018-A	CY3		1	
ADD	B	000445						CR17-LUG	Q009-E	EQ09			
DEL	B	000460						Q009-C	R028-A	Q009-C		1	
ADD	B	000460						Q009-C	R028-A	EQ09-C		1	
DEL	B	000500						CR17-LUG	Q009-E	EQ9			

THE FOLLOWING WIRE CHANGES ARE INCLUDED IN THIS LISTING

	REV	WIRE	C	S	T	LNGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG
DEL	B	000790						CR12-LUG	R017-B	R17-W		1	
DEL	B	000800						CR15-LUG	R018-B	R18-W		1	
DEL	B	000810						CR11-LUG	R019-B	R19-W		1	
DEL	B	000820						CR14-LUG	R020-B	R20-W		1	
DEL	B	000830						CR10-LUG	R021-B	R21-W		1	
DEL	B	000840						CR13-LUG	R022-B	R22-W		1	
DEL	D	000450		20	10			R002-A	R028-A	EQ09-C			
DEL	D	000460						R028-A	Q009-C	EQ09-C			
DEL	D	000480		20	10			R004-B	R001-B	EQ10-C			
DEL	D	000490						R001-B	Q010-C	EQ10-C			
DEL	D	000510		20	10			R030-A	R002-B	EQX			
DEL	D	000520		20	10			R002-B	R029-A	EQX			
DEL	D	000530		20	10			R029-A	R028-B	EQX			
ADD	D	000535						R029-A	Q009-C	EQX			
DEL	D	000540						R028-B	Q003-E	EQX			
ADD	D	000545						Q003-E	Q009-C	EQX			
DEL	D	000580		20	10			R001-A	R027-B	EQY			
DEL	D	000590		20	10			R003-B	R001-A	EQY			
ADD	D	000595						R003-B	Q010-C	EQY			
DEL	D	000600		20	10			R004-A	R003-B	EQY			
DEL	D	000610						R004-A	Q004-E	EQY			
ADD	D	000615						Q004-E	Q010-C	EQY			

GENERAL NOTES PAGE

ALL WIRES ARE 9-16-30 UNLESS SPECIFIED N 000010
USE TEFLON SLEEVING ON BUS WIRES N 000020
E010 IS CHASSIS GRD ON J101 MTG SCREW N 000030

NOTE 1- TAG ALL WIRES IN TO FIELD N 000040

N 000050

NOTE 3- REFER TO ASSY DWG 10840-203 FOR R30 R10 R12 R13 R6 R3 N 000060
R15 R24 R25 R8 WIRING. N 000070

N 000080

NOTE 4- USE THERMATE GREASE WHEN MOUNTING RH50 RESISTOR ON N 000090
10992-203 PANEL N 000100
MOUNT TRANSISTORS, DIODES PER CCP WORKMANSHIP MANUAL N 000110
SECTION 16 N 000120

N 000130

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000010	6	22	30			A001-01	J101-01	AC-3				00790
000020	6	22	30			B001-02	J101-02	ACOM				00800
000030						J101-04	R030-B	+24V-X				00820
000040		20	10			R029-B	R030-B	+24V-X				01070
000050	9	18	30			CR17-STUD	R029-B	+24V-X		1		01170
000060	9	20	30			CR17-STUD	E001	+24V-X				01720
000070		20	10			E001	E003	+24V-X				01260
000080	9	20	30			E003	E004	+24V-X				01270
000090		20	10			E004	E005	+24V-X				01280
000100						J101-23	R003-A	+24V-Y				01010
000110		20	10			R003-A	R027-A	+24V-Y				01160
000120	9	18	30			CR18-STUD	R027-A	+24V-Y		1		01230
000130	9	20	30			CR18-STUD	E002	+24V-Y				01710
000140	9	20	30			E002	E006	+24V-Y				01290
000150	9	20	30			E006	E007	+24V-Y				01300
000160	0	16	30			CR08-LUG	J101-13	GRD-24RX				00910
000170	0	16	30			CR08-LUG	Q007-E	GRD-24RX				01490
000180		20	10			CR02-K	Q007-E	GRD-24RX				01650
000190	0	16	30			CR16-LUG	J101-22	GRD-24RY				01000
000200	0	16	30			CR16-LUG	Q008-E	GRD-24RY				01500
000210		20	10			CR03-K	Q008-E	GRD-24RY				01660
000220	0	20	30			E010	J101-03	GRD CH				00810
000230						J101-05	R021-A	CX1				00830
000240						CR05-LUG	R021-A	CX1		1		01670
000245						CR10-LUG	R021-A	CX1		1		01790
000250						J101-06	R019-C	CX2				00840
000260						CR06-LUG	R019-C	CX2		1		01680
000265						CR11-LUG	R019-C	CX2		1		01770
000270						J101-07	R017-A	CX3				00850

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000280						CR01-LUG	R017-A	CX3		1		01690
000285						CR12-LUG	R017-A	CX3		1		01750
000290						J101-14	R022-A	CY1				00920
000300						CR09-LUG	R022-A	CY1		1		01700
000305						CR13-LUG	R022-A	CY1		1		01800
000310						J101-15	R020-C	CY2				00930
000320						CR07-LUG	R020-C	CY2		1		01810
000325						CR14-LUG	R020-C	CY2		1		01780
000330						J101-16	R018-A	CY3				00940
000340						CR04-LUG	R018-A	CY3		1		01820
000345						CR15-LUG	R018-A	CY3		1		01760
000350	9	20	30			J101-26	R005-01	DCSX				01040
000360	9	20	30			J101-27	R007-01	DCSY				01050
000370						CR02-A	J101-24	ECR2				01020
000380		20	10			CR01-STUD	CR02-A	ECR2				01590
000390		20	10			CR01-STUD	CR06-STUD	ECR2				01580
000400		20	10			CR05-STUD	CR06-STUD	ECR2				01570
000410						CR03-A	J101-25	ECR3				01030
000420		20	10			CR03-A	CR04-STUD	ECR3				01620
000430		20	10			CR04-STUD	CR07-STUD	ECR3				01610
000440		20	10			CR07-STUD	CR09-STUD	ECR3				01600
000445						CR17-LUG	Q009-E	EC09				01730
000470						CR18-LUG	Q010-E	EC10				01740
000535						R029-A	Q009-C	ECX				
000545						Q003-F	Q009-C	ECX				
000550						Q002-E	Q003-E	ECX				01320
000560						Q001-E	Q002-E	ECX				01310
000570						Q001-E	R030-A	ECX		1		01180

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000595						R003-B	Q010-C	EGY				
000615						Q004-E	Q010-C	EGY				
000620						Q004-E	Q005-E	EGY				01330
000630						Q005-E	Q006-E	EGY				01340
000640						Q006-E	R027-B	EGY		1		01220
000650						Q001-C	R021-C	Q01-C		1		01430
000660						Q002-C	R019-A	Q02-C		1		01440
000670						Q003-C	R017-C	Q03-C		1		01450
000680						Q004-C	R022-C	Q04-C		1		01460
000690						Q005-C	R020-A	Q05-C		1		01470
000700						Q006-C	R018-C	Q06-C		1		01480
000710	9	20	30			Q001-B	R009-02	Q01-B				01350
000720	9	20	30			Q002-B	R011-02	Q02-B				01360
000730	9	20	30			Q003-B	R014-01	Q03-B				01370
000740	9	20	30			Q004-B	R016-01	Q04-B				01380
000750	9	20	30			Q005-B	R023-02	Q05-B				01390
000760	9	20	30			Q006-B	R026-01	Q06-B				01400
000770	9	20	30			Q009-B	R005-02	Q09-B				01410
000780	9	20	30			Q010-B	R007-02	Q10-B				01420
000850	9	20	30			J101-12	Q007-B	XCB				00900
000860												
000870		20	10			J101-08	Q007-LUG	XCC				00860
000880		20	10			CR08-STUD	Q007-LUG	XCC				01630
						CR08-STUD	CR12-STUD	XCC				01530

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000890		20	10			CR11-STUD	CR12-STUD	XCC				01520
000900		20	10			CR10-STUD	CR11-STUD	XCC				01510
000910	9	20	30			J101-09	R009-01	XP1				00870
000920	9	20	30			J101-10	R011-01	XP2				00880
000930	9	20	30			J101-11	R014-02	XP3				00890
000940	9	20	30			J101-21	Q008-B	YCB				00990
000950						J101-17	Q008-LUG	YCC				00950
000960		20	10			CR16-STUD	Q008-LUG	YCC				01640
000970		20	10			CR15-STUD	CR16-STUD	YCC				01560
000980		20	10			CR14-STUD	CR15-STUD	YCC				01550
000990		20	10			CR13-STUD	CR14-STUD	YCC				01540
001000	9	20	30			J101-18	R016-02	YP1				00960
001010	9	20	30			J101-19	R023-01	YP2				00970
001020	9	20	30			J101-20	R026-02	YP3				00980

TERM LISTING

DIGITAL ZIP MODE PLOTTER -765 W/L 10036-101

CONTROL 156

REVISION PAGE

REVISION	DATE	EFFECTIVITY	APPLICABLE ENGINEERING ORDERS
NC	06 24 65		
A	01 05 68	NEXT PARTS MADE	AE 000010

GENERAL NOTES PAGE

WIRE TYPE NUMBERS ARE AS FOLLOWS-
10- BARE TINNED BUS
30- STRANDED TEFLON
USE R414/ SE LUG OR EQUIV. FOR THE FOLLOWING.
TP1 TP2 AND TB01 1 TO 2

NOTE 1- SLEEVINGS REQUIRED ON DS1 S9 S5 C1 C2 F001

NOTE 2- R3 RESISTOR MOUNTED ON S8 SWITCH B01-B04
REFER TO ASSY DWG.

NOTE 3- REFER TO ASSY DWG.

N 000010
N 000020
N 000030
N 000040
N 000050
N 000060
N 000070
N 000080
N 000090
N 000100
N 000110
N 000120

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000010	6	22	30			J302-02	S009-BC	AC-2		1		
000020	6	22	30			J302-03	TB01-11	AC-3				
000030	6	22	30			S005-C	TB01-11	AC-3				
000040	6	22	30			B001-01	TB01-11	AC-3		1		
000050	6	22	30			DS01-01	TB01-11	AC-3		1		
000060	6	22	30			J302-04	TB01-09	ACOM		1		
000070	6	22	30			B001-02	C002-02	ACOM				
000080	6	22	30			C001-02	TB01-09	ACOM		1		
000090	6	22	30			C001-02	C002-02	ACOM		1		
000100						M003-BLK	TB01-02	ACOM		1		
000110						M002-RED	TB01-05	ACOM				
000120	3	22	30			J301-01	S004-AC	+8V				
000130	3	22	30			J301-01	S007-AC	+8V				
000140	3	22	30			S001-NC	S002-AC	+8V				
000150	3	22	30			S002-AC	S004-AC	+8V				
000160	3	22	30			S006-NC	S007-AC	+8V				
000170	2	22	30			J301-03	TB01-14	+18V				
000180	2	22	30			S002-BC	TB01-14	+18V				
000190	1	22	30			J302-06	R002-02	+24V				
000210	0	22	30			J301-19	S009-A02	GRD				
000220		24	10			S009-A02	S009-A03	GRD				
000230	0	18	30			J302-07	M001-W	GRD-24RX				
000240	0	18	30			J302-15	M004-W	GRD-24RY				
000250	0	22	30			J302-05	E001	GRD-CH				
000260	6	22	30			S005-NO	TB01-12	CMC		1		
000270						M003-BLU	TB01-03	CMC				
000280						M002-BLU	TB01-04	CMC				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000290						M002-BLK	TB01-06	CMF				
000300						M003-RED	TB01-01	CMR				
000310	9	18	30			J302-08	M001-B	CX1				
000320	9	18	30			J302-09	M001-R	CX2				
000330	9	18	30			J302-10	M001-O	CX3				
000340	9	18	30			J302-11	M004-R	CY1				
000350	9	18	30			J302-12	M004-B	CY2				
000360	9	18	30			J302-13	M004-O	CY3				
000370	9	22	30			J302-14	TP01	CZ1				
000380	9	22	30			DA01-02	R001-02	CZ1	RED DOT	3		
000390	9	22	30			R001-02	TP01	CZ1				
000400	9	22	30			DA01-01	R002-01	CZR				
000410	9	22	30			R002-01	TP02	CZR				
000420	6	22	30			DS01-02	TB01-08	DSR		1		
000430	9	22	30			J302-17	R001-01	HCZ1				
000440	9	22	30			S003-BC	S008-B03	JFAS				
000450	9	22	30			S002-A10	S003-AC	JMX				
000460	9	22	30			S007-A10	S008-AC	JMY				
000470	9	22	30			S002-B10	S007-BC	JSLO				
000480	9	22	30			S007-B10	S008-BC	JSPD				
000490	6	22	30			J302-01	S009-B01	KAC	115AC RELAY	1		
000500	6	22	30			S009-B01	S009-B02	KAC	115AC RELAY	1		

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000510	6	22	30			C001-01	TB01-07	RCMF		1		
000520	6	22	30			C002-01	TB01-10	RCMR		1		
000530		24	10			S003-B02	S003-B04	RFAS				
000540	9	22	30			S003-B04	S008-B02	RFAS				
000550		24	10			S008-B02	S008-B04	RFAS				
000560	9	22	30			S008-B04	R003-02	RFAS	R3	2		
000580	9	22	30			J301-02	TB01-13	RLN				
000590	9	22	30			S009-AC	TB01-13	RLN				
000600	9	22	30			J301-09	S003-B01	SFAS				
000610		24	10			S003-B01	S003-B05	SFAS				
000620	9	22	30			S003-B05	S008-B05	SFAS				
000630		24	10			S008-B01	S008-B05	SFAS				
000640	9	22	30			S008-B01	R003-01	SFAS	R3	2		
000650	9	22	30			J301-15	S006-C	SLLY/				
000660	9	22	30			J301-14	S001-C	SLRY/				
000670	9	22	30			J301-07	S003-A03	SMX/				
000680	9	22	30			J301-11	S008-A03	SMY/				
000690	9	22	30			J301-04	S004-A09	SPD				
000710	9	22	30			J301-05	S004-A01	SPU				
000720	9	22	30			J301-13	S002-B01	SSLO				
000730		24	10			S002-B01	S002-B09	SSLO				
000740	9	22	30			S002-B09	S007-B09	SSLO				
000750		24	10			S007-B01	S007-B09	SSLO				
000760	9	22	30			J301-08	S003-A04	SXN				
000770	9	22	30			S002-A01	S003-A05	SXN				
000780		24	10			S003-A04	S003-A05	SXN				

WIRE	C	S	T	LENGTH	TERMIN.	-FROM-	-TO-	-TERM-	REMARKS	NOTES	ROUTG	SEQ
000790	9	22	30			J301-06	S003-A01	SXP				
000800	9	22	30			S002-A09	S003-A02	SXP				
000810		24	10			S003-A01	S003-A02	SXP				
000820	9	22	30			J301-12	S008-A04	SYN				
000830	9	22	30			S007-A01	S008-A05	SYN				
000840		24	10			S008-A04	S008-A05	SYN				
000850	9	22	30			J301-10	S008-A01	SYP				
000860	9	22	30			S007-A09	S008-A02	SYP				
000870		24	10			S008-A01	S008-A02	SYP				